

In Two Minds: cognitive and linguistic skills used by children with normal language and a specific impairment of language to understand and resolve ambivalent emotion.

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As for imagining how one person can possibly contain such opposing feelings as, in the case we have been looking at, the most profound of joys and the most painful of griefs, and then going on to discover or to create the single word by which the particular feeling born of that conjunction would come to be designated, this is a task that many have undertaken in the past, but all abandoned the attempt knowing that, as is the case with a constantly shifting horizon, they would never even reach the threshold of the door to those ineffabilities longing for expression. Human vocabulary is still not capable, and probably never will be, of knowing, recognising and communicating everything that can be humanly experienced and felt. Some say that the main cause of this very serious difficulty lies in the fact that human beings are basically made of clay, which, as the encyclopaedias helpfully explain, is a detrital sedimentary rock made up of tiny mineral fragments measuring one two hundred and fifty-sixths of a millimetre. Up until now, despite long linguistic study, no one has managed to come up with a name for this.

(The Cave, José Saramago, 2002)

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Abstract

Background: Specific language impaired (SLI) children are at risk of emotional-behavioural difficulties yet few studies have examined the part played by language.

Method: Cognitive-linguistic skills required by typically developing and SLI children to understand emotional ambivalence were investigated in three related studies using Donaldson and Westerman's 1986 methodology. This American study required children to answer questions related to stories evoking emotional ambivalence: *The Puppy Story* (love/anger); *The Kitten Story* (sad/happy).

First study results replicated American findings on British subjects.

The second study identified 5 cognitive-linguistic devices used by 32 typically developing children (7 – 11 years) when resolving two different types of ambiguity: emotional ambivalence and linguistic ambiguity (*The Puppy Story/The Twins Story*): *mental role play* (subjects answered questions in the character of the story protagonist), *mime*, *metaphor*, *personal experience*, *folk psychology*. Responses were analysed for expressive language performance/discourse errors. Differences were interpreted as differences in the cognitive demands of the tasks.

Results: Children used different cognitive-linguistic devices resolving the two types of ambiguity. Girls became more specific in their use of cognitive-linguistic devices when answering questions relating to emotions. Children found linguistic ambiguity easier than emotional ambivalence to resolve showing that it was the emotional content not the ambiguity which created the difference in cognitive and linguistic stress.

The third study compared 4 SLI children's responses to ambivalent emotion (*Puppy Story*) with those of the typically developing children. *The Kitten Story* was presented with pictures to support language skills.

Results: SLI children's responses were less mature and atypical compared to language normal children's ability to understand ambivalent emotion and use cognitive-linguistic devices. The use of pictures did not help the children.

Conclusions: *Mental role play* represents the gradual internalisation of empathy required for understanding emotional ambivalence which was lacking from the SLI children's data. Atypical *metaphor* use reflected the SLI children's inability to conceptualise the confusion inherent in contradictory emotions.

CHAPTER ONE

INTRODUCTION

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Introduction to the Study

It is estimated that around 4% of children have a specific difficulty with the development of language that cannot be attributed to poor general intelligence, poor hearing, an inadequate language environment or psychiatric disorder. Since the early 1980's the term *Specific Language Impairment* (SLI) has been used to describe these children, whose language development is not only slow, but whose profile of development is qualitatively different from that of their normally developing peers. Such children are also distinguished from the purely speech disordered who have disorders of the production of the phonetic/phonological speech string but whose language is intact. (See Leonard, 1998; Law et al., 2000 for studies of prevalence of SLI. See Leonard, 1991 for SLI as a clinical category; Ullman and Pierpont, 2005 for an alternative perspective on SLI definition).

For a number of years research into SLI and emotional-behavioural disturbance has shown a high co-morbidity rate (Gualtieri et al., 1983; Beitchman et al. 1986; Kotsopoulos and Boodoosingh, 1987; Prizant et al., 1990; Beitchman et al. 1996 for review; Botting and Conti-Ramsden, 2000; Toppelberg, 2000). Children with communication impairments are more likely to develop behavioural difficulties and psychiatric illness than their peers (Silva, Williams and McGee, 1987; Clegg, Hollis and Rutter, 1999). Studies have found that between 50% and 75% of children with communication difficulties go on to develop emotional and behavioural difficulties (Baker and Cantwell, 1987; Camarata, Hughes and Rhul, 1988). For children with disordered language development the risk of psychiatric illness increases with age (Beitchman et al. 1989; Rutter and Mawhood, 1991; Davidson and Howlin, 1997).

To summarise, Benner et al. (2002), reviewing the literature, found that approximately three quarters of children with identified emotional and behavioural difficulties have significant language deficits. Approximately half of those with language disorders have identifiable emotional and behavioural difficulties. The prevalence of language deficits in children who exhibit anti-

social behaviours is ten times higher than in the general population. Both population studies, as well as studies of clinic-referred children, demonstrate the strong association of language with psychiatric disorders.

Many other forms of developmental impairment besides SLI, even those of an acute nature which lead to temporary hospitalisation, can result in emotional delay or regression of previously normally developing emotional understanding (Lipian, 1985; Harris and Lipian, 1989). In this sense emotional-behavioural difficulties may be seen as reactive to the communication handicap or adverse environmental factors rather than as a result of language impairment per se.

Similarly, communication impairments could be hypothesised as causing emotional-behavioural difficulties because of the resulting breakdown in communication between such children, their primary carers and peers. In this scenario it could be argued children with speech, rather than language, disorders would have the greatest difficulty with communication because intelligibility is affected and so are more at risk of emotional-behavioural difficulties than language impaired children whose language is impaired but speech intelligible.

Alternatively, school age children with SLI often present with poor peer interaction, negative self-perception and low self-esteem making them vulnerable to psychiatric conditions (Walker et al. 1994; Copeland-Mitchell, Denham and Demulder, 1997; Jerome et al., 2002; Marton, Abramoff and Rosenzweig, 2005). Children with language comprehension deficits may not be able to fully understand and enter into the play of their peer group and so feel socially excluded, thus rendering them at risk of emotional-behavioural difficulties from an early age. In addition such children may, by necessity, be forced into, or feel more comfortable, associating with younger children and so lack age appropriate role models for emotional development. Disordered language development may also go unrecognised leading to misdiagnosis or misunderstanding of the child's presenting difficulties. This in turn may create a vulnerability to emotional-behavioural problems. Researchers have

consistently found that a third or more of children referred for help with emotional and behavioural problems have unsuspected communication difficulties (Cohen and Lipsett, 1991; Cohen et al., 1993; 1998a, 1998b; Giddan, Milling and Campbell, 1996; Jones and Chesson, 2000; Schultheis, 2001).

The hypothesis that children with communication difficulties experienced high levels of frustration leading to outbursts of negative behaviours was tested and confirmed by Caulfield (1989). (See also Sigafoos, 2000). However, Haynes and Naidoo (1991) looking at SLI children attending a special school found that high rates of behaviours which were indicative of frustration declined quite rapidly, but problems associated with low self-confidence, low self-esteem and social withdrawal remained. Both speech and language impaired children are also vulnerable to bullying by their peers. Conti-Ramsden and Botting, (2005) reported a higher proportion of SLI children as victims of bullying (36%) than their peers (12%) at 11 years of age. In terms of SLI and emotional versus behavioural (conduct) disorders some recent evidence suggests that it is emotional development and well-being that are more significantly affected with no evidence of increased conduct disorders in this client group (Conti-Ramsden and Botting, 2005).

Overall, the question as to which came first, the communication impairment or the emotional-behavioural difficulties is a complex one. (See Cross, 2004 for a concise presentation of this debate). Baker and Cantwell's work (1982; 1985; 1987) suggests that speech and language factors do indeed play a primary causal role in the onset of psychiatric disorders. However, what is of most interest to this present study is that Baker and Cantwell's research, corroborated by Beitchman et al. (1996) made a distinction between speech and language disorders and found that those children with "pure" language disorder were most at risk of concomitant psychiatric disorders. (See also Whitehurst and Fischel, 1994 for supporting evidence). Baker and Cantwell's studies showed that psychiatric illness was more than twice as prevalent in the language disordered children as in the purely speech disordered children.

There is thus existing evidence that SLI children are vulnerable to emotional difficulties and that there may be something within the nature of disordered language development itself which places these children at particular risk of that emotional disturbance.

Background

The exploration of the emotional lives of human beings, and the role played by emotions in those lives has a well established and ancient history. Yet until relatively recently the study of emotion has generally been considered as a subsidiary subject, investigated more for the light it could shed on other areas of human understanding than for its own merits. This has been true of all three of the main disciplines investigating emotion: philosophy, biology and psychology.

In philosophy, emotion has been studied under the varied headings of ethics, aesthetics and epistemology (theory of knowledge). However, the critical philosophic debate over the relation between mind and matter (ontology), rather than perpetuating an inseparable divide, has instead allowed for the creation of a bridge between philosophy and biology (neurology) through the study of human affect. Neuroscientists such as LeDoux (1998), Panksepp (1998) and especially Damasio (1994, 1999, 2003) are starting to provide empirical evidence on the brain mechanisms of emotion which can be used to inform the philosophy of the mind, and which may also prove fruitful for long standing debates in ethics (Goldie, 2002).

The third discipline under which emotion has been investigated, psychology, provides the context for this present study. The research presented in this thesis places emotional maturation within the study of cognitive developmental psychology and the child's emerging theory of mind.

Theory of Mind studies (ToM) originating in Premack and Woodruff's original 1978 paper on primates, seek to provide an explanation of the individual's ability to understand and predict the mental states and actions of the self and others. Wimmer and Perner's classic 1983 article introduced into developmental psychology the idea that a child not only has to create their own representation of the world but also, crucially, a representation of others' representation of the world. In order to function effectively within complex human society I must not only understand the world from my point of view but also from yours, and understand the similarities and differences between these perspectives. Child studies then began to look at a variety of sources for evidence of how knowledge of these, often conflicting perspectives, develops throughout childhood. These included language studies relating to children's early verbalisations concerning mental states, their ability to deceive others, and their understanding of emotions.

Cognitive theories of emotions, originally developed by Schachter (1971), established that the quality of an emotion depends on cognitive and perceptual evaluations of the external world and the internal state. In contemporary theories of emotional development the child is viewed as an active participant in social life developing hypotheses to understand the mental lives of those around them. As they mature, meta-cognitive skills allow the older child, with a wider knowledge of the causes and time-course of emotion, to enter into a capacity for greater emotional insight and self-control (see Saarni and Harris, 1989). This present research seeks to understand how the school aged child's developing language skills affect their ability to conceptualise emotion, allowing them increasing knowledge of their own and others' mental states. It has connections with the work of those philosophers who study adult representations and understanding of emotion but look to supporting evidence from the developmental sciences (see Goldie 2002).

Rationale for this Study

This present research looks specifically at the role language plays in children's developing ability to co-ordinate contradictory feelings toward the same person or situation at the same time (i.e. to understand emotional ambivalence).

There were four reasons why this aspect of children's emotional development was chosen for further study:

1. Psychoanalytic theorists point to the critical importance of ambivalence in terms of the developing capacity to form stable relationships with others (Freud S., 1909/1955; Freud, A., 1965; Winnicott, 1971; Kernberg, 1975; Mahler, Pine and Bergman, 1975; Bowlby, 1979).

John Bowlby writing in *The Making and Breaking of Affectional Bonds* (1979) stated that:

.....the steps by which an infant or child progresses towards the regulation of his ambivalence are of critical import for the development of his personality.

Studies carried out by Bowlby and his followers found that the ability of a child to cope with his/her ambivalent emotions was the best predictor of that child's ability to form and sustain relationships in adult life. Any link between language development and this area of emotional development is therefore likely to have profound implications for the emotional well being of children with disordered language development.

2. Researchers in social cognition have shown that the child's verbal reasoning ability (i.e. the ability to evaluate a situation, especially an ambivalent situation) is a significant organising construct for social and emotional understanding (see Livesley and Bromley, 1973, on person

perception; Borke's 1971 research on empathy; Salz and Meadow, 1971, on concept conservation and Hand, 1981, Kaplan and Crockett, 1968, on contrasting traits and behaviours). This would make SLI children vulnerable to difficulties in this area of complex emotional understanding.

3. It is suggested that the understanding of ambivalent emotions depends on understanding temporal and spatial concepts mediated by language. In order to fully resolve emotional ambivalence the child has to understand that contradictory feelings are experienced at the same time (rather than sequentially) and mixed together (rather than separately).

SLI children who are experiencing difficulties developing the language of time and space are therefore likely to be disadvantaged in this area of emotional understanding.

4. Understanding and resolving emotional ambivalence is a task of later childhood (Harter, 1980; Selman, 1980; Harris, 1983; Harter and Buddin, 1983; Carroll and Steward, 1984). Since the risk of psychiatric illness increases with age for language disordered children, this aspect of emotional maturation is likely to be particularly vulnerable for disturbance in this population.

Aim of this Study

The purpose of this study was to research the hypothesis that emotional-behavioural disturbances in language disordered children could be the direct result of a link between emotional development and language development. As the first in a series of steps, this present British study replicates research by the American authors Donaldson and Westerman (1986) investigating normally developing children's ability to understand emotional ambivalence.

Donaldson and Westerman's research investigated children's increasing ability to co-ordinate contradictory emotions in terms of a temporal/spatial paradigm. Sixty typically developing children were selected for the American study: twenty 4 – 5 year olds; twenty 7 – 8 year olds; twenty 10 – 11 year olds. Children listened to two stories and were asked questions regarding the protagonist's feelings in terms of time (feelings experienced simultaneously vs. sequentially) and space (feelings as mixed up or separate). Responses were rated according to the extent of the child's understanding of emotional ambivalence. Separate parts of the protocols were then assessed independently with respect to a proposed sequence in children's causal theories of emotions (children's understanding of what makes feelings come and go). The American methodology thus provides some evidence for the role of temporal and spatial concepts in the understanding of emotional ambivalence.

Donaldson and Westerman's research provided strong evidence for a developmental progression in children's ability to co-ordinate ambivalent emotions, as well as a hierarchical model in which children's understanding of emotional causality shifts from an externally based theory, where feelings are linked closely with events, to an internally based theory where feelings largely depend on memories, thoughts and attitudes. In addition, they found a significant relationship between these two domains of children's understanding of emotions. Accordingly, their results suggest that understanding how internal states mediate emotions may be a significant component in understanding ambivalence and, in addition, that the motivation to integrate conflicting feelings may play a role in promoting the external to internal shift in children's causal theories of emotions. The onset of ambivalence thus leads to a more mature form of emotional reasoning as children's causal theories of emotions become increasingly related to the understanding of emotional responsibility and control.

While there have been a number of studies since 1986 which have looked at emotional ambiguity and causal theories of emotions (see Harris, 1989, reprinted 1996, for an overview), Donaldson and Westerman's research

appears unique in the focus it places on the temporal and spatial nature of contradictory emotions and in that it allows investigation of both aspects of emotional development through a single methodology. This British research proposed to use the theory, developmental sequence and methodology established by Donaldson and Westerman to research language disordered children's emotional development. It was therefore necessary to replicate the American study in order to assume a similar pattern and rate of development in Britain. For this British pilot study a smaller sample size was used, however the American protocols were strictly followed.

A replication of the American study would also allow a closer examination of the methodology prior to its application to a language disordered population. Such an application would need to take into account the problem of using protocols which are language based with language disordered children. An examination of the American methodology would need to look at how the language normal children responded to the narrative structure of the stories presented and the question/answer protocols before an adapted methodology could be considered for language disordered children. In addition, results from both the American and British studies were used to identify cognitive and linguistic abilities required by children to progress through a hierarchical model of emotional development. Data from typically developing British children would also provide qualitative comparative material for the interpretation of the responses from the language impaired children.

Organisation of Thesis

Chapter Two: First Study

This chapter presents the British replication study of the American research looking at typically developing children's ability to understand and resolve ambivalent emotions and their causal theories of emotion. The chapter ends with a critique of the methodology, a discussion of the preliminary findings in regard to the cognitive and linguistic skills required for understanding and resolving ambivalent emotions, and the implications for SLI children.

Chapter Three: Second Study

This chapter presents the language normal study which investigated the specific cognitive-linguistic skills required by typically developing children to understand ambivalent emotions. The chapter ends with a summary of the main points on which the third study, with SLI children, was then based.

Chapter Four: Third Study

This chapter presents the study of SLI children's ability to understand and resolve ambivalent emotions. A comparison is made between the emotional maturation of the typically developing children and that of the SLI children, as well as the use of the cognitive-linguistic skills identified in the second study. Results obtained are related to the individual language profiles of the SLI children.

Chapter Five: Conclusion

This chapter looks at the reliability of the findings from the SLI children's study. It then looks at the role of language in thinking about emotions. Areas of further research are indicated as well as the implications of the results of both studies for typically developing and language impaired children.

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CHAPTER 2

Aim

The aim of this first study was to examine closely the theory, developmental sequence and methodology established by the American researchers Donaldson and Westerman (1986) for typically developing children's understanding of emotional ambivalence.

There were three reasons for this close examination. Firstly, it was not possible to automatically assume that British children would respond with a similar pattern and rate of development as American children. Several major reviews of research on similarities and differences in emotional meanings across cultural groups have established that social and cultural differences can affect the self expression of emotions, as well as the emotional understanding of others (Marsella, 1980; Good & Kleinman, 1984; Shweder & Levine, 1984; Kleinman & Good, 1985; White & Kirkpatrick, 1985; Lutz & White, 1986; Scherer, Wallbott, & Summerfield, 1986; Shweder, 1991, 1993, 1994; Russell, 1991; Mesquita & Frijda, 1992; Kitayama & Markus, 1994).

Mesquita and Markus (2004) provide a brief, but very clear overview of some of the major issues relating to contemporary research in cross cultural studies, and discuss the ways in which culture influences emotional processes. They also outline the ways in which American emotions and the expression of emotion differ from that experienced in other, outwardly similar, Western societies, specifically the Dutch (D'Andrade, 1984; Stephenson, 1989; Wierzbicka, 1994; Van Der Horst, 1996; Heine, Lehman, Markus & Kitayama, 1999). A replication of the American study was therefore required to establish how closely typically developing British children follow their American peers in the understanding and resolving of ambivalent emotions.

The second reason for replicating the American study was to allow a closer examination of the methodology and materials prior to their use with a language disordered population. Such an application needed to take into

account the problem of using language based protocols with language disordered children before an adapted methodology could then be considered for the language disordered children.

As part of the examination and critique of the methodology with a view to using the protocols with language disordered children, the researcher planned to record and note details of subjects' pragmatic, linguistic and paralinguistic responses to the stories, interview questions and interview procedures as no systematic description or analysis of subjects' linguistic and communicative behaviours had been included in the American study. These observations are reported in the *Results* section of this chapter and discussed along with the statistical findings of this study.

The third and final reason for this replication study was to begin to consider the specific linguistic and cognitive skills which might be required for the understanding and resolution of ambivalent emotions. The data gathered from the British children, together with a close analysis of their reactions to the stories and interview protocols, could be used as the first step in identifying skills which could then be tested for through an adapted methodology. The identification of linguistic and cognitive skills required for the resolution of emotional ambivalence would allow for predictions in performance on the same set of tasks (interviews about stories containing ambivalent emotions) to be made for children with disordered language profiles.

METHOD

Ethical considerations

One of the first ethical considerations of the study was how to accommodate the professional requirements of a full time Speech and Language Therapist with the academic role of a researcher.

The researcher made an initial appointment with her line manager, the Director of the Speech and Language Therapy Service to discuss the nature of the research to be undertaken. It was agreed that the research was a private undertaking, outside of the remit of the researcher's job specifications and clinical duties. The researcher would be working independently of the Speech and Language Therapy Service and it was agreed in principle that the researcher could apply for scholarships which would be used to employ a colleague to cover some of her clinical sessions in order to release her for research. Time taken for research would be agreed in advance with the Chief Paediatric Speech and Language Therapist in order to ensure that the researcher's clinical caseload was not disadvantaged. The researcher agreed that should, for any reason, a conflict of interest occur between her research and her clinical caseload, the clinical caseload would at all times take priority. No such conflict arose during the course of the study.

Although the initial stages of the research did not involve National Health Service (NHS) patients the researcher wrote a letter to the Medical Director of her employing NHS Trust explaining the research. This was because it was unreasonable to expect members of the public, such as teachers and parents, to make a distinction between the researcher's professional role and her role as an independent researcher. It was therefore important that the NHS Trust had no reservations about the research being conducted by one of its employees, albeit in a private capacity.

The Medical Director approved the research on condition that it followed National Health Service guidelines. The researcher therefore applied to the

Local Research and Ethics Committee (LREC) submitting an outline of the research proposal, its theoretical context and methodology and possible benefits to the NHS, as well as copies of all the materials to be used and letters giving information to parents, parental consent forms and initial contact letters. Ethical approval was then granted by the LREC.

The initial contact letter to parents of possible research subjects stressed that their child's name had been given to the researcher in confidence by the child's class teacher. It also stressed that the child was selected because of his/her *good* language skills and *sound* emotional development. This was to offset any possible anxieties the parent might feel on receiving an unsolicited letter from a Speech and Language Therapist. Parents were given the opportunity to meet with the researcher in person or to talk to the researcher over the telephone if they required further information regarding the study.

Measures were built into the recruitment protocols to ensure that child subjects gave informed consent to participate. The parental consent form required that the child sign his/her name agreeing to take part in the study. In addition the researcher spoke to each child at the beginning of the first session, explained what would happen and asked if the child was still happy to take part in the research. The child was told that s/he could stop the session at any point and that s/he did not have to take part in subsequent sessions if s/he didn't want to. Donaldson and Westerman's materials for conducting the study also included interviewing and debriefing procedures designed to protect the emotional well being of the children in the study and these are given in Appendix 1.

Recruitment

A total of sixty children had been recruited for the original American study. Twelve children were recruited for this British pilot study. The number of British subjects was decided on pragmatic grounds. (No rationale had been given in the American study for the number of subjects). Twelve British children would be a small enough number for the study to be completed easily and quickly with the limited resources available to one researcher, while at the same time providing information on the way the subjects responded to the stories and interview questions. If the British results differed from the American findings, then a decision could be made as to whether or not this could be due to the smaller sample size, and if a larger number of children should be included in the British study. British results which showed a similar pattern of response and development in the children but which were not statistically significant might be related to the small British sample size. British results which indicated a different pattern of responses and development might suggest cultural variation in the emotional processes of the British and American children.

Two local Exeter mainstream schools were approached by the researcher and asked to take part in the study. Both schools were selected because of the extensive professional relationships already established between each of the two school Special Educational Needs Co-ordinators (SENCOs) and the researcher, who was the designated Speech and Language Therapist for these schools.

The Special Educational Needs Co-ordinators were qualified teachers each with a minimum of 10 years teaching experience in mainstream classrooms. They had attended a number of training sessions on speech and language impairment provided by the local Speech and Language Therapy Service. One of the SENCOs was also studying for a postgraduate qualification in speech and language difficulties through a distance learning course at Birmingham University. Both the SENCOs therefore had a sound working knowledge of language normal and language disordered children which

helped in their selection of subjects for the study. In addition to their special needs role, both SENCos occupied senior management positions within their schools. This facilitated the general administration of the study such as contact with Head Teachers and class teachers, negotiating times to visit the schools and booking rooms and quiet areas in the schools where the children could be seen.

Initial contact with the schools was made by telephone to the SENCos by the researcher. A brief description of the study was given and following this, appointments were made to visit each of the SENCos at their schools. These visits allowed for more detailed discussion of the study, specifically the selection criteria and the commitment required from the schools in terms of time and additional resources such as the availability of quiet rooms where the children could be seen.

Permission to involve pupils in research was required from the Head Teacher of the schools by the County Education Service. The decision on how to proceed further in gaining this permission to recruit pupils from the schools was left to the individual SENCos. One of the SENCos spoke personally to the Head Teacher and gained her permission for the study on behalf of the researcher. The other SENCo arranged for a meeting between the Head Teacher and the researcher where the researcher explained the study and was then granted permission to continue in that school. Both SENCos stipulated that they, and not the researcher, should approach class teachers and explain the study to them, including the subject selection criteria. This was because the SENCos felt that:

- class teachers would be more inclined to agree to their pupils participating in the study if the request came from a senior member of the school's staff.

- the SENCOs would have the flexibility to choose when to approach the class teachers and ensure that the teachers had adequate time to discuss the study and to meet with the SENCO to select children.
- the SENCOs personal knowledge of the class teachers would allow them to present the information about the study in the most accessible form.
- class teachers could discuss freely with the SENCOs any reservations they felt about the study and which if unresolved might interfere with their enthusiasm for the study.

The researcher agreed to this stipulation as the benefits, outlined above, outweighed the possible disadvantages of teachers receiving information third hand and not directly from the researcher, which could lead to inappropriate selection of subjects if the criteria were not fully understood. It was felt that the SENCOs had sufficient knowledge and understanding of the study to pass on the information adequately, and indeed all the children selected by the SENCOs and class teachers for this first study fulfilled the selection requirements.

The SENCOs and class teachers were provided with copies of the information sheet and parental permission form which would be sent to parents. SENCOs and class teachers then provided a list of suitable children for the researcher, together with their home addresses. Each class teacher was sent a copy of the initial contact letter posted to parents by the researcher so that they were prepared if approached by the parents of children in their class.

All the mothers of the youngest children (4 – 5 years old) contacted their child's nursery/class teacher on receipt of the letter from the researcher. The mothers sought reassurance and approval from the teachers regarding the nature of the research, their child's aptitude for taking part, and the overall importance of the research for understanding children's development. One of

these mothers then went on to talk directly to the researcher on the telephone requesting more information about the nature of the interview questions. One of the parents (mother) of the middle group of children (7 – 8 years old) spoke to their child's class teacher concerning the research. None of these parents spoke directly to the researcher. None of the parents of the older children (10 – 11 years old) spoke either to their child's class teacher or the researcher. All the parents approached allowed their children to take part in the research.

Subjects

Twelve children participated in the study: four 4 - 5 year olds (British Mean: 4 years 4 months; American Mean: 5 years 3 months); four 7 – 8 year olds (British Mean: 7 years 8 months; American Mean: 8 years 2 months); four 10 – 11 year olds (British Mean: 11 years 5 months; American Mean: 10 years 9 months) with an equal number of boys and girls in each group. Of the two mainstream schools used for this study one was a First school with attached Nursery which allowed access to children aged between 4 years and 8 years. The second was a Middle school from which were recruited the older, 10 – 11 year age group. All the children successfully completed the required sessions.

Children were selected through discussion with the Special Educational Needs Co-ordinators in collaboration with the Head Teachers, class teachers and nursery teachers. The criteria used for the selection of subjects were that they had no identified emotional-behavioural disturbance, no history of recent trauma, no current or past identification of a speech and/or language impairment, were within the average range for verbal and non-verbal skills, and were from a mixed range of socio-economic backgrounds. All children selected had British English as their only language experience. An example of recent trauma was given as parents divorcing within the past twelve months. To ensure a mixed range of socio-economic backgrounds each potential subject was classified as either class 1 or class 2. To qualify as class 1 the main wage earner of the family was required to be in professional

employment and the family living in private accommodation. To qualify as class 2 the main wage earner was in non professional employment and the family living in council owned or Housing Association property. An equal number of class 1 and class 2 subjects were recruited.

One child in the youngest age group was from a mixed race background. His mother was born to a third generation British Chinese family. Following discussion with his nursery teacher regarding the child's cultural experiences his selection for inclusion in the study was allowed to stand.

The researcher was allowed access to the results of standardised tests and assessments for the purposes of verifying the children's cognitive abilities. These included CoPS (*Cognitive Profiling System*) for the younger children and SATs (*Standard Assessment Tasks*) and reading comprehension scores for the older children. Reading comprehension was assessed by the *Group Reading Test 11, 6 – 14* (The Macmillan Test Unit with Neil Hagues and Juliet Burley, NFER-Nelson, this edition published in 2000). All assessment had been carried out within the 12 months prior to the research commencing. Please see Appendix 2 for information regarding the *Cognitive Profiling System* which measures a range of verbal and non-verbal cognitive skills.

Liaison with schools and all the research procedures were carried out by the researcher. Although the researcher had visited and worked at the schools frequently before the start of this study, none of the children selected had previously been known to, or had contact with, the researcher.

A mother of a child in the youngest age group (4 – 5 years of age) telephoned the researcher as she was concerned that her child had a very anxious personality and might find the sessions worrying or upsetting. It was agreed with this mother that the child could choose to have a member of school staff present throughout the sessions if that would make him feel more comfortable. In addition the researcher assured the parent that the session would be discontinued immediately if the child became distressed. The researcher also asked the mother to let her know if the child appeared

troubled after the initial session. In the event, this child participated fully in the study and although presenting as reserved said he enjoyed the sessions.

Procedures

Procedures followed those established by Donaldson and Westerman in their 1986 American study. The children were required to listen to two stories. Each story describes a situation in which the story character can be construed as having mixed feelings (ambivalent emotions). *The Puppy Story* investigates the ability to co-ordinate anger and love while *The Kitten Story* seeks to co-ordinate happy and sad feelings.

The research stories heard by the children in the two sessions are reproduced in full on pages 31 - 32. Please see Appendix 1 for the interview questions. Story order was counterbalanced. Both stories had been previously written for the American study and were stated by the authors as being equivalent in length and linguistic complexity (page 657, *Development of Children's Understanding of Ambivalence and Causal Theories of Emotions* by Sally Donaldson and Michael Westerman, 1986). Copies of the stories, interview protocols, and scoring manuals together with permission for their use were obtained from Dr. Michael Westerman, New York University.

Interviews were audio taped and took place in a quiet room at the child's school. Each child was seen individually. At his request one of the younger children was accompanied by his Nursery teacher. All the other children were seen on their own. Each child was seen in two separate sessions with one story per session. This follows the American protocols.

The texts of both stories were screened for Americanisms which might be unfamiliar to British children before being recorded on audio tape by the researcher. Only one alteration was made to the text of a story: this was the use of *ball* instead of *baseball* in *The Puppy Story*. The interview questions and protocols were also screened for Americanisms. Two changes were

made to the interview questions: the consistent use of *children* rather than the synonymous *kids/children* and the consistent use of *angry* rather than the synonymous *mad/angry*. In the American study *kids/children* and *mad/angry* were used interchangeably. In the event, the children themselves spontaneously used *mad/angry* synonymously in their responses to the interview questions.

Two changes were also made in the *Debriefing* section of the interview protocol (Appendix 1). In the American study, the last but one sentence of the *Debriefing* is as follows:

Would you like to turn the tables and ask me some questions before you leave?

It was felt that the younger (4 – 5 year old) British children would not necessarily understand the meaning of *turn the tables*. This sentence was therefore re-phrased as:

Would you like to ask me some questions before you leave?

The last sentence of the American *Debriefing* section is:

You can be the psychologist and I'll be the student.

Again, it was felt that the terms *psychologist* and *student* would be unfamiliar to the younger British children. The sentence was therefore re-phrased as:

You can be the teacher and I'll answer your questions.

For this British study the researcher made pencil notes during and immediately following the sessions on each subject's non-verbal behaviour and discourse (conversation) skills. This was part of the observation of the language normal children's reactions to the stories and the interview

questions and procedures and arose from a critique of the methodology and its suitability for use with children with language impairments.

Experimental task

Each child was told that s/he was going to hear two audio tape recorded stories about a child of the same age and sex as the subject. The child was told that the researcher would make two visits to see them with one story heard per visit.

A structured interview, designed by the American authors, was used to elicit subjects' understanding of the story character's ambivalent feelings and their own theories about how feelings change. In *The Puppy Story*, subjects were asked about the co-ordination of angry and loving feelings and about what makes angry feelings come and go. In *The Kitten Story*, they were asked about the co-ordination of happy and sad feelings and about what makes sad feelings come and go. The interview protocol dealt with the issues of ambivalence and feeling change separately. Each issue had its own set of questions, which were examined and scored independently.

The stories were presented in two parts. Following the American protocols the subjects were asked to repeat both parts of the stories in their own words immediately after hearing them. This was to check auditory verbal memory and narrative sequencing skills. If required *Wh* questions (i.e. *who*, *what*, *where*, *when*) could be used to check comprehension.

In the first part of both stories the protagonist is depicted as having single valence feelings. In *The Puppy Story* the character loves the dog which has just found his/her favourite lost toy. In *The Kitten Story* the character is sad/angry at losing his/her cat. At this point the child is simply asked to identify how the story character feels.

The second part of each story introduces the possibility of ambivalence. In *The Puppy Story* the dog destroys a plane/paintings the character has worked hard to create. In *The Kitten Story* the character is given a new kitten. Again, the child is asked to identify the character's feelings. If the subject did not immediately mention two conflicting feelings, probe questions were asked to ascertain if the protagonist could be feeling anything else.

At this point, for children whose responses included mention of the two contradictory emotions (scenario A), a series of questions was asked to determine the nature of the child's understanding. If the child failed to mention both possible feelings spontaneously in response to the first few questions that followed the second part of each story, an alternative series of questions was asked to determine whether the child actually had some understanding that the initial "forgotten" emotion could be present (scenario B).

A separate section of the interview protocols for both stories focused on subjects' own theories about how feelings change and the degree of control children could have over their emotions. The children were asked: *What makes angry/sad feelings go away? Is there anything children can do to make angry/sad feelings go away? and If angry/sad feelings go away, will they come back?* and, if the response to this question was affirmative, *What will make them come back?*

The American Stories

The following are the texts of the stories written by the American authors Donaldson and Westerman and reproduced with their permission. Part one introduces the story protagonist and the dominant emotion (love for *The Puppy Story* and sadness for *The Kitten Story*). Part two describes the events which result in the story protagonists' ambivalent emotions. An alternative version is provided by the American authors for part two of *The Puppy Story* so that it can be gender specific. The authors do not give any reasons for this.

The Puppy Story (Anger/Love)

Part One

Mike/Molly has a dog named Pepper. He/she likes to play with Pepper who follows him/her everywhere. One morning Mike/Molly went outside to look for a ball that he/she has lost. Pepper followed him/her outside as usual. Soon Pepper came over to Mike/Molly wagging his tail. Pepper had found the ball. He brought it over and dropped it at Mike's/Molly's feet.

Part Two

For Boys

Later on that afternoon, Mike decided to launch his favourite model airplane. He had spent three days building this plane and liked it very much. He invited his parents to see the plane's first flight. Mike sent the plane up in the air, it soared over the yard and began to land in the grass. Just then, Pepper rushed in after the plane and chewed it up.

For Girls

Later on that afternoon, Molly decided to show her paintings to her parents. She has spent a long time making these paintings. She liked them very much. She laid them out on her bed and went to get her parents. While she was out of the room, Pepper rushed in and chewed them all up. When Molly came back, she found that all her beautiful pictures had been wrecked.

The Kitten Story (Sad/Happy)

Part One

When Bill/Bonnie was _____ (*age of subject*) years old, he/she was given a kitten for his/her birthday. He/she had wanted a kitten for a long time so he/she was very happy when he/she finally got the kitten. He/She named the kitten Snowball. Bill/Bonnie told his/her friends that Snowball was the best kitten in the whole world. One morning he/she was in a big rush. Bill/Bonnie left Snowball in his/her bedroom and forgot to shut the window. His/Her mother also forgot to shut the window. That afternoon Snowball jumped out the window and ran away. Bill/Bonnie looked for Snowball day after day, week after week.

Part Two

Bill/Bonnie looked for Snowball for a long time but he/she did not find her. Finally he/she gave up looking. He/She talked to his/her parents about wanting a new kitten. But he/she also said that a new kitten just wouldn't be the same as Snowball. Bill/Bonnie's birthday is coming up soon. His/Her parents decided to give him/her a new kitten as a present. Right now Bill/Bonnie opens the door and sees his/her new kitten.

Scoring Criteria

The Puppy Story

The manuals developed by the authors of the American study were used to evaluate subjects' responses in terms of two hypothesised developmental sequences relating to:

1. children's ability to identify and understand emotional ambivalence.
2. children's theories of what causes emotions to change.

These manuals are reproduced in full in Appendices 3 and 4.

Each of the developmental sequences consists of stages (called levels by the American authors) reflecting the child's maturing emotional reasoning. Level 0 represents the least mature reasoning and Level 3 the most mature.

Following the American protocols each child was given a level reflecting their ability to understand ambivalent emotion and also their understanding of what causes emotions to change. Both these levels were based on the entire interview rather than on answers based on a specific set of questions. The levels were assigned according to a profile of abilities reflected in the child's replies. For understanding contradictory emotions these abilities relate to each of the three component skills which represent a mature resolution of emotional ambivalence:

- that conflicting feelings can coexist at the same time towards the same person.
- that contradictory feeling can interact.

- that feelings evoked by an immediate situation can be co-ordinated with feelings related to the target's enduring traits and to internal processes such as memories and attitudes.

In order to explore children's causal theories of emotions (what makes feelings come and go) the American researchers asked the following questions as part of the structured interview:

Puppy Story: *Will M get over his/her angry feelings?*

What makes angry feelings go away?

What makes angry feelings come back?

Kitten Story: *Will B get over his/her sad feelings?*

What makes sad feelings go away?

What makes sad feelings come back?

When ascribing levels to the child's responses to these questions the American protocols required the following to be kept in mind (taken directly from the Feeling Change manual Appendix 4).

- Does the child believe that feelings come and go as a result of changes in external events or circumstances over which he has no control?
- Or, conversely, does the child relate shifts in feeling state to changes in his own thoughts and attitudes over which he can exert some conscious control?
- How much control does the child feel someone has over the fluctuations in his feeling states? In other words, does he believe that there is anything that children can do to make their sad and angry feelings go away?

- If the child believes that someone can exert some control over his feelings, what strategies does he use to dispel sad and angry feelings?

In order to help the evaluator ascribe a particular level to a child's responses a list of strategies found in the American data is given in the manual.

The following is a summary of the scoring manuals for the ambivalence and feeling change sequences and copied with the permission of the American authors:

Understanding ambivalence

Level 0 – Children correctly identify single feelings, but do not realise that multiple, including contradictory, feelings exist.

Feelings are conceived as occurring one at a time in an all or nothing fashion. Feelings arise in response to a particular situation and when the situation is altered, that feeling is displaced by the next feeling.

An example of a Level 0 response would be a child who says that the character in *The Puppy Story* only feels angry and that his/her loving feelings from the morning are *all gone*.

Level 1 – Children recognise that multiple, even contradictory feelings exist although typically only talk about experiencing conflicting feelings when probed: they realise that they feel differently at different times depending on the situation.

Feelings are now remembered along with the events which give rise to them. However, there is no understanding that the memory of a past feeling can affect one's current feeling state. Contradictory feelings are seen as mutually exclusive reactions to different behavioural events, occurring sequentially at different times.

An example of a Level 1 response is the child who initially states that the protagonist in *The Kitten Story* only feels happy but, with probing, acknowledges that there may also be sad feelings persisting as well. In response to further questioning the child indicates that the story character could feel both happy and sad depending on the situation, but that it is not possible to feel both at the same time. In other words, the story character feels first one emotion and then the other.

Level 2 – Children begin to realise that contradictory feelings can be experienced towards the same situation or person. They are able to consider the possibility that feelings might interact and influence each other, but they don't know how to reconcile or understand ambivalent feelings.

At this level, while feelings are no longer seen as solely wedded to the events that evoke them, neither are they related to enduring memories or other internal processes which exist independently of one's current feeling state and outside the press of the immediate situation. These children are at a transitional stage. They attempt to keep contradictory feelings distinct either by separating them on a temporal/spatial dimension or by maintaining the link between events and feelings.

An example of a Level 2 response would be the child who acknowledges in *The Puppy Story* that the character could feel anger and love but who then keeps the feelings separate by saying the protagonist feels *anger on the outside and love on the inside*.

Level 3 – Children understand ambivalence and recognise that two contradictory feelings can coexist at the same time toward the same person and situation. Feelings are now understood in terms of a wider context within which they impinge upon and influence one another.

Negative feelings can dampen good feelings while positive feelings can modulate one's negative attitudes. Feelings are less bound to particular situations; rather they are related to enduring traits of the target. Children at

this level can co-ordinate the press of an immediate feeling with memories, thoughts and attitudes.

Examples of Level 3 thinking show evidence of the confusion evinced by conflicting emotion. The story character is perceived as unsure of his/her feelings. In *The Puppy Story* the protagonist *won't know whether he loves or hates the dog*. Children may refer to the character wanting to forgive the dog despite the acknowledged anger. Opposing feelings are referred to as *mixed up* rather than remaining separate.

Theories of how sad and angry feeling change

Level 0 – Unscorable responses because of limited or unclear data. For example the child repeatedly answers *I don't know*.

Level 1 – Children believe that sad and angry feelings come and go in response to external events and circumstances.

Children believe they are in a passive position as regards their own emotions. Feelings are wedded to events and therefore a change in feelings can only be brought about by a change in events which are seen as beyond the control of the child.

An example of Level 1 thinking is the child who states that the sad feelings in *The Kitten Story* will only go away if the original cat returns or the protagonist is given a new kitten.

Level 2 – Although negative feelings still come and go largely in response to external events and circumstances, there is a beginning awareness that thoughts and memories also affect the ebb and flow of feeling states.

At this level children are in transition between seeing their feelings solely as responses to external events, and seeing them as related to internal processes as well.

An example of Level 2 thinking would be the child who states in *The Puppy Story* that the angry feelings would go away if the dog repairs the damaged toy and the protagonist goes to play with friends. Angry feelings would return if the child remembers the broken toy. At this level, remembering is described by the child as a passive process in contrast to the way memories are perceived at Level 3.

Level 3 – Negative feelings come and go largely in response to memories, thoughts and attitudes.

When feelings are seen as elicited by inner processes, children recognise that their well-being can be influenced by unhappy memories and/or bad thoughts: children begin to understand that they can exert control over their feelings.

For example, in *The Puppy Story* the story character can dispel angry feelings towards the dog by actively remembering how much he really loves his pet and then forgiving him.

Data Reduction

Verbatim transcripts were prepared by the researcher from audio tapes of the interviews. The following transcription conventions were used.

- Unintelligible utterances were marked with **X**. The numbers of syllables and words were included in the transcribed utterance e.g. **X XX XXX** was used to denote three words of one, two and three syllables.
- The symbol (**_**) was used to denote the point in an utterance when a speaker came to a dead end and had to begin again (maze) or when the speaker did not complete the utterance.
- Delays before responding or pauses during speaking were marked as in the transcript with each dot representing a second of time.

There were four transcripts for each subject: the interview sections on ambivalence from the first and second stories and the sections on how feelings change from the two stories. Thus each child was given four levels – two ambivalence levels (one each for *The Puppy Story* and *The Kitten Story*) and two feeling change levels (again, one for each of the two stories).

The researcher assigned an ambivalence level (0 - 3) to the transcripts relating to ambivalence. In assigning a level several features of the child's responses were considered. This was in accordance with Donaldson and Westerman's protocols.

- How much probing was required before the subject identified the presence of two feeling states.
- How the subject dealt with the questions about time (feelings experienced simultaneously vs. sequentially) and space (feelings as

mixed up or separate) to determine the extent of the child's knowledge that it is possible to experience two feelings at the same time towards the same target.

- The degree to which subjects recognised that conflicting feelings can interact and influence one another.
- How the subject understood the relationship between events and feelings.

As the final determinant, assessments of the entire transcripts were matched to one of the profiles used to define the ambivalence levels as provided by Dr. Westerman, the second author of the American study. These profiles are reproduced in the Ambivalence Level Scoring manual (Appendix 3) and for the Feeling Change Score Level manual (Appendix 4). When difficulty was encountered in deciding between levels, final decisions were made conservatively in favour of the lower level. This was based on the design of the protocol which was weighted towards eliciting subjects' most advanced thinking through the use of probe questions.

The same procedures were used to assign levels of understanding to the children's theories of what causes feelings to change. These levels (0 – 3) represent a developmental progression in children's understanding of emotional causality and are described in the scoring manual.

In addition, all the data collected was scored independently by an experienced Speech and Language Therapist working with a non paediatric client group and in a different Health Authority district from that of the researcher. The following inter-rater reliability scores were obtained. Both the Kappa and Weighted Kappa scores are given.

INTER-RATER RELIABILITY SCORES:

Ambivalence Scores

The Puppy Story:

Kappa = 0.77 (p<0.0001)
(0.44 to 1.10)
Weighted Kappa = 0.85 p = 0.015
(0.16 to 1.54)

The Kitten Story:

Kappa = 0.89 (p<0.0001)
(0.56 to 1.21)
Weighted Kappa = 0.93 p = 0.0014
(0.36 to 1.50)

Feeling Change Scores

The Puppy Story:

Kappa = 0.87 (p<0.0001)
(0.47 to 1.27)
Weighted Kappa = 0.89 p = 0.0136

The Kitten Story:

Kappa = 1.00 (p<0.0001)
(0.60 to 1.40)
Weighted Kappa = 1.00 p= 0.0012
(0.39 to 1.61)

Unweighted Kappa agreement rates:

Kappa	Strength of agreement
< 0.2	Poor
> 0.2 ≤ 0.4	Fair
> 0.4 ≤ 0.6	Moderate
> 0.6 ≤ 0.8	Good
> 0.8 ≤ 1.0	Very good

Agreement rates therefore range from good to very good.

RESULTS

There were three aims in conducting this study:

1. To examine the degree to which British children follow the American developmental model in their understanding and resolving of ambivalent emotions. (Donaldson and Westerman, 1986).
2. To examine the methodology and materials used in the study prior to their use with a language disordered population. This also led to an observation of the subjects' pragmatic and linguistic responses to the interview questions.
3. To generate data which could be used in the first step towards identifying specific linguistic and cognitive skills used by children in their understanding and resolving of ambivalent emotions.

The results of the study are given under the first two headings: the statistical results of the children's performance, and the observations of their response to the methodology and materials. The implications of these results are explored in the Discussion section of this chapter. Suggestions are also made as to which specific cognitive and linguistic skills might be necessary for answering the interview questions on ambivalent emotions (3rd aim). An adapted methodology is then proposed to further explore these skills. This methodology is detailed in Chapter 3.

STATISTICAL RESULTS

In the American study, hierarchical multiple regression analysis was used to process the data. No explanation was given by the authors as to why parametric testing was carried out on non-parametric data. In this British study it was decided that non-parametric tests should be used. Accordingly, Kendall's tau was selected as being the most appropriate test for the ordinal data generated. Following the procedure established by the American authors Donaldson and Westerman *The Kitten Story* was labelled Story A and *The Puppy Story* was labelled Story B.

Firstly, statistical analysis was used to test for the contribution of development (chronological age) on children's understanding of ambivalence for *The Kitten Story* (ambivalence level/A). A parallel analysis was conducted for the ambivalence level for *The Puppy Story* (ambivalence level/B). For both stories the results provided strong support for the predicted relationship between age and understanding of ambivalence (Tables 1 – 4). Tables 1 and 2 show the distribution of ambivalence level scores for each age group for Story A and Story B respectively. Tables 3 and 4 show the results of statistical analysis ($p < .001$).

Identical analyses were conducted for sex, socio-economic status, and order of story presentation for Story A and Story B (ambivalence level/A and B). Sex, socio-economic status or order of story presentation, were not found to be significantly related to ambivalence A or B.

Secondly, statistical analysis was used to test for the contribution of development (chronological age) on children's theories of how feelings change on Story A (feeling change/A) and Story B (feeling change/B). Tables 5 and 6 show the distribution of feeling change levels for each age group. (No child obtained a Level 0 for their theories of how feelings change for either story).

Age was found to be significantly related to feeling change/A and feeling change/B (Tables 7 and 8; $p < .0001$). Sex, socio-economic status or order of story presentation, were not found to be significantly related to feeling change A or B.

As in the American study, it was hypothesised that children's theories of how feelings change would be related to their understanding of ambivalence. Tables 9 and 10 show the distribution of subjects' ambivalence level scores by feeling change level scores for Stories A and B respectively. The results of the analysis, which controlled for chronological age, showed that ambivalence level/A was significantly related to feeling change/A and ambivalence level/B was significantly related to feeling change/B (Tables 11 and 12; $p < .001$).

The results of this British study thus strongly supported the results obtained by Donaldson and Westerman's American research.

The results are now presented in the order in which they were carried out by the researcher.

Table 1

	Ambivalence for Story A (<i>The Kitten Story</i>)				Total
	0	1	2	3	
<u>AGE-GROUP</u>					
4 – 5 years	3	1			4
7 – 8 years		3	1		4
10 – 11 years			2	2	4
Total	3	4	3	2	12

Table 1 showing the number of subjects in each group at Ambivalence Levels 0 – 3 for *The Kitten Story* (Story A).

Table 2

	Ambivalence for Story B (<i>The Puppy Story</i>)				Total
	0	1	2	3	
<u>AGE-GROUP</u>					
4 – 5 years	2	2			4
7 – 8 years		2	2		4
10 – 11 years			2	2	4
Total	2	4	4	2	12

Table 2 showing the number of subjects in each group at Ambivalence Levels 0 – 3 for *The Puppy Story* (Story B).

Table 3
Significance Levels: Story A (Ambivalence) *The Kitten Story*

		Value	Asymp. Std.Error*	Approx. T**	Approx. Sig.
Ordinal by Ordinal	Kendall's tau-b	.853	.053	13.830	.000
	Kendall's tau-c	.896	.065	13.830	.000
	Gamma	1.000	.000	13.850	.000
N of Valid Cases		12			

* Not assuming the null hypothesis.
** Using the asymptotic standard error assuming the null hypothesis.

Table 4
Significance Levels: Story B (Ambivalence) *The Puppy Story*

		Value	Asymp. Std.Error*	Approx. T**	Approx. Sig.
Ordinal by Ordinal	Kendall's tau-b	.801	.040	12.247	.000
	Kendall's tau-c	.833	.068	12.247	.000
	Gamma	1.000	.000	12.247	.000
N of Valid Cases		12			

* Not assuming the null hypothesis.
** Using the asymptotic standard error assuming the null hypothesis.

Table 5

	Feeling change for Story A (<i>The Kitten Story</i>)			
	1	2	3	
<u>AGE-GROUP</u>				
4 – 5 years	4			4
7 – 8 years	1	2	1	4
10 – 11 years		2	2	4
Total	5	4	3	12

Table 5 showing the number of subjects in each group at Feeling Change Levels 1 – 3 for *The Kitten Story* (Story A).

Table 6

	Feeling change for Story B (<i>The Puppy Story</i>)			
	1	2	3	
<u>AGE-GROUP</u>				
4 – 5 years	3	1		4
7 – 8 years	1	3		4
10 – 11 years		1	3	4
Total	4	5	3	12

Table 6 showing the number of subjects in each group at Feeling Change Levels 1 – 3 for *The Puppy Story* (Story B).

Table 7
Significance Levels: Story A (Feeling Change) *The Kitten Story*

		Value	Asymp. Std.Error*	Approx. T**	Approx. Sig.
Ordinal by Ordinal	Kendall's tau-b	.716	.128	5.949	.000
	Kendall's tau-c	.708	.119	5.949	.000
	Gamma	.895	.116	5.949	.000
N of Valid Cases		12			

* Not assuming the null hypothesis.
** Using the asymptotic standard error assuming the null hypothesis.

Table 8
Significance Levels: Story B (Feeling Change) *The Puppy Story*

		Value	Asymp. Std.Error*	Approx. T**	Approx. Sig.
Ordinal by Ordinal	Kendall's tau-b	.758	.126	5.427	.000
	Kendall's tau-c	.750	.138	5.427	.000
	Gamma	.947	.072	5.427	.000
N of Valid Cases		12			

* Not assuming the null hypothesis.
** Using the asymptotic standard error assuming the null hypothesis.

Table 9

	Feeling change for Story A (<i>The Kitten Story</i>)			Total
	1	2	3	
Ambivalence for Story A				
0	3			3
1	2	2		4
2		1	2	3
3		1	1	2
Total	5	4	3	12

Table 9 showing the distribution of subjects’ Ambivalence Level Scores by Feeling Change Scores for *The Kitten Story* (Story A).

Table 10

	Feeling change for Story B (<i>The Puppy Story</i>)			Total
	1	2	3	
Ambivalence for Story B				
0	1	1		2
1	3	1		4
2		2	2	4
3		1	1	2
Total	4	5	3	12

Table 10 showing the distribution of subjects’ Ambivalence Level Scores by Feeling Change Scores for *The Puppy Story* (Story B).

Table 11
Significance Levels: Story A (Ambivalence level related to Feeling Change score) *The Kitten Story*

		Value	Asymp. Std.Error*	Approx. T**	Approx. Sig.
Ordinal by Ordinal	Kendall's tau-b	.721	.087	8.485	.000
	Kendall's tau-c	.750	.088	8.485	.000
	Gamma	.900	.104	8.485	.000
N of Valid Cases		12			

* Not assuming the null hypothesis.
** Using the asymptotic standard error assuming the null hypothesis.

Table 12
Significance Levels: Story B (Ambivalence level related to Feeling Change score) *The Puppy Story*

		Value	Asymp. Std.Error*	Approx. T**	Approx. Sig.
Ordinal by Ordinal	Kendall's tau-b	.566	.133	4.099	.000
	Kendall's tau-c	.583	.142	4.099	.000
	Gamma	.737	.162	4.099	.000
N of Valid Cases		12			

* Not assuming the null hypothesis.
** Using the asymptotic standard error assuming the null hypothesis.

OBSERVATION RESULTS

The children participating in the study were observed in their responses to the methodology and materials (taped stories, interview questions). The following observations were noted:

- Discourse errors made by the youngest children (4 – 5 years of age) when answering the interview questions.
- Predominantly, but not exclusively, linguistic performance errors made by the middle group of children (7 – 8 years of age) when answering interview questions. These were errors of grammar and syntax and also included unintelligible utterances.
- Predominantly, but not exclusively, expressive language performance errors made by the oldest group of children (10 – 11 years of age) when answering interview questions. These were difficulties with sentence formulation including hesitations, revisions and mazes, but where the utterance remained intelligible.
- The use of non-verbal communication skills when answering interview questions.

Discourse errors made by children aged 4 – 5 years

The following types of conversational breakdown were noted:

(In the following examples those utterances classed as an error are marked with an asterisk *).

- **The child does not answer the question asked.**

Example 1 (R = Researcher, B = male subject aged 4 years)

R: How do you think Mike felt when Pepper found his ball?

B: 'Cos he looked in the bush.*

Example 2 (R = Researcher, A = female subject aged 5 years)

R: How do you think Molly feels in the story?

A: She dropped it on her toe.*

R: I think..I think she just dropped it near her feet. I don't think it actually hurt her toe. I think it just went by her feet. But how do you think Molly feels about getting her ball back?

A: Her name's Molly.*

R: Her name's Molly that's right. And how do you think Molly feels about getting her ball back?

A: Her dog gets it.*

- The child does not (is unable to) take their conversational turn.

Example 1 (R = Researcher, L = female subject aged 4 years)

R: How does Molly feel in the story?

L:Sad and then happy I think.

R: Sad and then happy. Why does she feel sad and then happy?

*L: ...Um.....**

R: She feels sad because?

L: (no response)*

Example 2 (R = Researcher, L = female subject aged 4 years)

R: Some children have told me she might be angry. Does that make any sense to you?

L: (nods head)

R: Yeah. Why do you think she might be angry?

L: (no response)*

- **The child suddenly introduces an unrelated topic.**

Example 1 (R = Researcher, A = female subject aged 5 years)

R: Do you think angry feelings can go away sometimes?

A: Mm. Yeah.

R: Yes. Yeah. And..so do you think Molly's angry feelings (□)

(interruption:A does not allow R to complete her turn)

A: I..I've got a action video at home.*

Example 2 (R = Researcher, A = female subject aged 5 years)

R: You said that Molly will get over feeling angry. Yes? Do you think she'll get over feeling happy as well?

A: You didn't put those away.*

- **The child introduces a number of physical distracters effectively ending the conversation when this ending has not been agreed with the conversation partner.**

A wide range of physical distracters were employed. The following are examples.

- The child gets up from their chair and begins to wander around the room.
- The child deliberately drops an object on the floor and goes under the desk to retrieve it.

- The child picks up an unrelated object and begins to look at it.
- The child gets up and picks up a nearby object and begins to look at it and/or talk about it e.g. a book from a bookshelf.

Linguistic performance errors made by children aged 7 – 8 years

Performance errors were noticeable in the expressive language of the children aged 7 – 8 years. Errors were related to a range of linguistic functions such as morphology and syntax. In addition, words were omitted plus there were numerous hesitations, pauses and revisions suggesting sentence formulation difficulties and which affected meaning. In this age group there was a high incidence of fillers used in sentences (e.g. *like*; *you know*) as well as obscure data which was undecipherable.

In the following examples morphological errors or revisions are printed in red.

Syntactic errors are printed in blue.

Omitted words are marked by a line in green _.

Hesitations, pauses and revisions suggesting sentence formulation difficulties are printed in green.

Fillers are printed in orange.

Utterances where the meaning is obscure are marked at the end with the symbol ▲.

An asterisk in the appropriate colour is used to mark utterances where more than one process is operating.

Example 1 (R = Researcher, M = male subject aged 7 years)

R: So..can you tell me a little bit more about what it's like to feel happy and sad sort of mixed up together?

M: Not very good 'cos it mix up like sad with happy he might get sad feelings over Snowball and_ he comes back he'll thinks happy _ ...Snowball and then another one goes so _ feels happy and sad with his other kitten. ▲

Example 2 (R = Researcher, M = male subject aged 7 years)

R: OK. Why do you think he would act differently if it was a neighbour's dog?

M: 'Cos if it is his own dog he can get him all the X (?time obscure) but if its his next door neighbour's dog _ can't always do it..get it..get him.*

Example 3 (R = Researcher, J = male subject aged 7 years)

R: How would that (the kitten Snowball returning) change them (Bill's feelings)?

J: XX (obscure) 'cos like all those things like of..like made him sad like about think of him..you know about Snowball won't go away. ▲

Example 4 (R = Researcher, J = male subject aged 7 years)

R: What do you think will make the sad feelings go away?

J: Uh....um... I think that X (obscure)...if..um..his new kitten..done something what'n XX (obscure) really nice one that Snowball's ever....hadn't ever done.

Example 5 (R = Researcher, L = female subject aged 7 years)

R: Do you think she'd act differently than she did towards Pepper?

L: Yeah. 'Cos Pepper's her dog..

R: Mmm..mmm.

L: ..and that's a different dog from Pepper.

R: Right.

L: That she hadn't knowed..knewed..knowed.

Expressive language performance errors made by children aged 10 – 11 years

Although grammatical and syntactic errors still occurred, performance errors in the oldest age group (10 – 11 years) were mainly related to hesitations, pauses, omitted words and revisions suggesting sentence formulation difficulties. Unlike the middle age group (7 – 8 years) these did not tend to affect meaning and utterances remained intelligible. As with the middle age group there was a high incidence of “fillers” used in sentences (e.g. *like*; *you know*) but no obscure data which was undecipherable. Responses showing expressive language difficulties appeared linked to specific complex interview questions which were demanding both cognitively and linguistically (i.e. required high level thinking skills reflecting sophisticated psychological knowledge of the story character's feelings and motivations, together with the

use of complex sentence structures containing a range of conjunctions and clauses).

Example 1: (R = Researcher, D = male subject aged 11 years)

R: Right..uh..if she doesn't do that do you think that Mike will stop loving her?

D: No...I think he'll still...he'll...he still loves her but not as much 'cos she chewed up her thing...but I think she'll ()...I think that Mike'll still love her.

Example 2: (R = Researcher, D = male subject aged 11 years)

R: Do you think Mike could feel both love and anger towards Pepper?

D: Yes.

R: How does that work?

D: Umm...well you love...um..um..you like.....you're angry with them a bit but you still love them 'cos they're like part of your family or a friend.

Example 3: (R = Researcher, A = male subject aged 11 years)

R: What do you think's going to happen to Mike's mixed up feelings?

A: Uh...don't know...if they ()...if he went off and cleaned up his ()...um..um..stopped the pain (subject referring to an earlier comment he made suggesting Pepper might have scratched the story protagonist) and went back then I think he would still be happy then.

Example 4: (R = Researcher, M = female subject aged 10 years)

R: What would make Bonny feel angry?

M: Because um..she would like ()...I think that it was her fault that she's lost it and that 'n..and she had it and she was given a chance to look after it and then..and now its just gone.

Example 5: (R = Researcher, M = female subject aged 10 years)

R: Is there any way else that you can tell that Molly loved Pepper?

M: Because...um..that she plays with her. And ..em..that ..em..when she found it she was happy..found the ball..she was really really happy about it.

The use of non-verbal communication skills

During the interviews the researcher made pencil notes against the interview questions recording non-verbal communication skills used by the subjects. It should be noted that no video recording was made during this replication study and so the reliability of these notes cannot be tested.

Subjects' use of mime was noted in the margin of the interview questionnaire and also described verbally by the researcher as it occurred. This was then recorded as part of the audio tape transcription.

It is also acknowledged that the pencil notes can only represent crude measures of the non-verbal communication skills used by the subjects. The speed of interaction and the complexity of the discourse prevented the taking of detailed notes. Although these notes were supplemented by longer observations at the end of the sessions they still represent only an

approximation of the subjects' communication skills and behaviours. The data gathered was important in that it informed the adaptation of the methodology for the second study presented in Chapter 3. Reservations in the data gathering in this replication study resulted in the introduction of increased rigour in the second study.

The following non-verbal communications were observed in the subjects:

Gestures used in place of words: subjects nodded or shook their heads to indicate *Yes* or *No* in answer to interview questions. Subjects in the older age group (10 – 11 years) also shrugged their shoulders to indicate that they didn't know, or weren't sure about the answer to an interview question.

Body language indicative of struggle behaviour: subjects in the older age groups (7 – 8 and 10 – 11 years) used a range of body movements to express struggle when answering complex questions. These included removing eye contact, facial expressions and change in body posture (suddenly leaning away from or towards the interviewer). These movements were often accompanied by non verbal hesitations such as *mmm*, *erm*, *er*, *uh*, *oh*, and numerous syntactic revisions.

Subjects in the youngest age group (4 – 5 years) showed less of these behaviours associated with specific questions. They did remove eye contact and take on a worried facial expression, but these behaviours were pervasive, extending over a number of questions and often accounting for a significant proportion of the total interview session. The researcher was frequently required to allow the youngest subjects to talk about topics well known to them (their own pets and families) in order to relax and then refocus their attention.

The struggle behaviours of the youngest subjects occurred more frequently at a pragmatic level as a result of discourse errors (see pages 52- 55). The struggle behaviours of the older two age groups (7 - 8 years and 10 – 11

years) appeared linked to cognitive and/or linguistic difficulties, either in terms of understanding a specific question or formulating a reply.

Mime: for example one girl aged 7 years clenched her fists to demonstrate how the story protagonist would look when she was angry. Facial expressions were also frequently mimed to show how the story character would look when they were *angry sad, happy*. These mimes were in specific response to interview questions asking the subject how the character looked or felt at certain points in the story. The majority of mimes occurred in the two older age groups: 50% (7 – 8 years); 42% (10 – 11 years); 8% (4 – 5 years).

DISCUSSION

The purpose of this first study was to: (1) assess the degree to which the American results are applicable to a British population; (2) provide a critique of the methodology; (3) begin to identify specific linguistic and cognitive skills required for the understanding and resolution of ambivalent emotion. In addition, observations were kept on subjects' behaviours (pragmatic and linguistic) in response to the research protocols. Results are therefore discussed under these headings and in the following order:

- Cultural transferability of American results to a British population.
- Observation of subjects' behaviours.
- Critique of methodology.
- Linguistic and cognitive skills required for the understanding and resolution of ambivalent emotions (preliminary findings).

The possible implications of the results for language disordered children are also outlined at the end of this section.

Cultural transferability of American results to a British population

Despite the small sample size, the British results were highly significant and fully supported the developmental model proposed by Donaldson and Westerman for children's understanding of ambivalent emotion and casual theories of emotion. A similar rate and pattern of development could therefore be assumed for British and American children's understanding and resolution of ambivalent emotion.

At the most advanced level, children understand that conflicting feelings can coexist at the same time, towards the same target, and that these feelings can interact and influence each other. In addition, children's causal theories of emotion change from an externally based hypothesis in which emotions are

linked closely with events, to an internally based hypothesis in which emotions are dependent on thoughts, emotions and attitudes. As predicated by the American study, significant relationships were found between the two domains of children's understanding of emotions.

It should be noted that the American authors admit in their 1986 paper that children's abilities in the two domains of understanding ambivalent emotion and what causes feelings to change were defined in ways which were not entirely independent:

The criteria for scoring children's responses in terms of the sequence for understanding ambivalence included elements related to whether a child understands that internal states mediate feelings.

Development of Children's Understanding of Ambivalence and Causal Theories of Emotions, Developmental Psychology 1986, page 661

It could therefore be argued that the two levels ascribed to the children are not in fact independent variables but refer instead to different aspects of emotional reasoning in regard to contradictory emotions.

Observation of subjects' behaviours (pragmatic and linguistic)

The main aim of this replication study was to establish that British children responded to the stories and interview questions in a similar way to American children of the same age. However, the replication also had an additional aim, which was to explore and study the linguistic and paralinguistic responses of the children. This was not done in the original American research which was concerned with the content of the children's utterances rather than their forms of communication.

There were two reasons for this additional aim. Firstly to identify those interview questions relating to emotional understanding which placed greatest

demands on the children's cognitive and linguistic abilities. This was based on the assumption that there is a relationship between cognitive load and performance errors. (See Jaeger, 2005, for an exploration of the relationship between typically developing children's performance errors and language development, also Fromkin, 1973). The second reason was to look at where the children's linguistic skills may interfere with their ability to communicate their emotional understanding, or lack of it.

The small sample size (12 subjects) of this first study precludes any definitive statements concerning the subjects' responses to the interview questions. A much larger sample size would be required to test the validity and reliability of observations. Although the verbal responses were audio tape recorded and transcribed (and thus could have been subject to reliability checks) non-verbal aspects were recorded live and there was no possibility of checking on the reliability and accuracy of these observations. Nevertheless, these initial observations were thought sufficient for establishing hypotheses which could then be tested by a larger study.

The following observations were noted.

- Discourse errors were predominately made by the youngest children (4 – 5 years of age) when answering the interview questions.
- Linguistic performance errors were predominately made by the middle group of children (7 – 8 years of age) when answering interview questions. Errors of grammar and syntax were noted and frequently the meaning of the utterance was obscure.
- Expressive language performance errors were predominately made by the oldest group of children (10 – 11 years of age) when answering interview questions. Difficulties with sentence formulation were noted including hesitations, revisions and mazes, but the meaning of the utterance remained intelligible.

- The children used a range of non-verbal communication skills when answering interview questions. These included the use of mime as well as body language indicative of struggle. This suggested that certain questions used to elicit the children's understanding of emotions placed increased demands on their linguistic and/or cognitive abilities.

Discourse errors made by children aged 4 – 5 years

In order to participate successfully with a competent speaker, children need to know how to take their turns in a conversation. They need to know how to maintain the topic of conversation or divert the topic to another topic they wish to discuss. However, the abrupt shift of topic to one of their own interest is not generally allowed. With very young children, adults often take the responsibility of ensuring the topic is a comfortable one for the child taking into account the child's interest and level of cognitive and linguistic ability. If the conversation breaks down both partners need to analyse who is responsible – has the speaker failed to be explicit or has the listener failed to understand – and they must work to repair the breakdown. (Rogers-Adkinson and Griffith, 1999).

The methodology of this research study relies on children's discourse skills when in conversation with the interviewer (researcher). The hierarchical model proposed by Donaldson and Westerman for children's developing understanding and resolution of ambivalent emotions suggests that the youngest children in the study (4 – 5 years) will not have the psychological knowledge or cognitive and linguistic abilities to answer the more complex questions relating to these contradictory feelings. Since the same interview questions are given, irrespective of age, to all the subjects from 4 – 11 years, it is likely that developmental differences in the subjects' discourse skills will be apparent during the interviews. This proved to be the case, with different

errors dominating at different ages. Indeed these “errors” demonstrate a degree of skill in dealing with the difficulties presented by the interviews.

Although referred to as discourse *errors*, the term *transgressions* or even *strategies* might be more appropriate, since these subjects are language normal children with age appropriate discourse and pragmatic skills. These children broke down pragmatically when they were confronted by the researcher with requests for information above their levels of psychological understanding (of emotions) and language comprehension. Presented with a conversation partner (the researcher) who repeatedly and perversely refused to acknowledge their signals of failed comprehension they responded by:

- not answering the question asked
- not taking their conversation turn
- failing to maintain the topic of conversation

In addition, this age group sometimes reverted to increasingly extreme methods (physical distracters) to divert or end the conversation.

The discourse errors observed in the interviews are errors in that they transgress the way people normally engage in everyday conversations (taking turns, repairing breakdowns, changing topics), but they were also valid communications made by the child. The errors were deliberate and used with communicative intent – unlike errors made by language impaired children or children with pragmatic difficulties.

Discourse errors committed by language normal children with age appropriate pragmatic skills perform an important function – they signal to the conversational partner that the conversation is above their present cognitive-linguistic skills. Indeed the errors can be seen to perform the task of attempting to steer the conversation away from irrelevancy (since the conversational topic is incomprehensible to the child) towards relevance (see

Leinonen and Kerbel, 1999 for a discussion of Relevance theory and pragmatics).

The youngest subjects in this first study introduced topics that they felt comfortable with (for example owning pets) and which were related to the adult's (researcher) initiating subtopic (a puppy), but not the primary topic, the story protagonist's ambivalent feelings:

R = Researcher, A = female subject aged 4 years

Story interview = *The Puppy Story Part 2*

R: *Why does she feel happy?*

A: *'Cos she's got her pictures brought back.*

R: *Oh. But she hasn't got them. They're all..they're all ruined aren't they?*

A: *Yeah.*

R: *No more pictures.*

A: *But you...have you got a dog?*

Here, the child at first tries to deny the story character has any sad or ambivalent feelings by saying the ruined paintings have been "brought back". When the researcher does not allow this, the child attempts to take control of the conversation by introducing her own topic (owning a dog), which is tangentially related to the topic under discussion (story about a puppy).

Only when the conversation partner (researcher) obstinately persists in pursuing topics and asking questions not understood by the child does the child resort to physical distraction measures (dropping objects on floor, picking up objects on table) or introducing topics unrelated to the main (interview) topic.

Even these topics are usually related to the present setting e.g. something in the interview room such as books on a book shelf, coloured stone eggs arranged on a desk, and which could therefore serve as an appropriate topic for joint conversation (i.e. the topic picked is not one which the researcher could have no knowledge of or no access to which is seen in children with clinically impaired pragmatic skills).

Having been unsuccessful in taking control of the conversation topic, the little girl quoted above later tried to introduce a different topic:

R: Does she feel anything else?

A: She's not happy.

R: She's not happy. No. She's not happy at all.

A: When are you going to read a story?

The topic (reading a story) is less relevant than the previous one introduced (owning a dog) but still related to the context (listening to stories). When the interviewer persists in continuing the topic of ambivalent feelings, the little girl again tries to change the story to avoid the conflicting emotions:

R: And now how does she feel?

A: Happy.

R: Why does she feel happy now?

A: 'Cos she got those pictures back.

R: Oh but she didn't. Pepper chewed them all up. They're all ruined.

The child is then re-focused back to the story and the interview continued, but when the child is yet again faced with a complex question outside the range of her psychological comprehension she finally transgresses the rules of discourse by interrupting the speaker and changes topic to an out of context and unrelated subject:

R: *Do you think angry feelings can go away sometimes?*

A: *Mm. Yeah.*

R: *Yes. Yeah. And..so do you think Molly's angry feelings...*

A: *I....I've got aaction video at home.*

The youngest group of subjects (4 – 5 years of age) broke down pragmatically, presenting with numerous discourse errors. These youngest children, pushed beyond their understanding of how conflicting emotions work, avoided questions either by not answering, answering a different question, changing the topic or ending the conversation through the use of a physical distracter. These children often required forced alternatives in order to elicit a response. There was considerable use of non-verbal responses such as nodding and shaking of the head.

These youngest subjects also required help to remain on task and attend to the story. They would attempt to relate questions to personal experience ignoring the story character or re-tell personal experiences similar to those depicted in the story but unrelated to the questions asked. Two out of the four subjects showed distraction strategies, such as playing with objects in the room and also removed eye contact when questions became particularly difficult.

As a group, these younger subjects also confused question words and the subject of a question. While it was possible to refocus all the subjects

sufficiently to obtain valid data, such behaviours are typical of younger children at the limits of their comprehension. Nevertheless, these children's expressive language remained appropriate to their age with minimal unexpected linguistic errors or syntactic revisions. Their pragmatic evasions appear to "protect" their expressive language from additional deterioration.

It is thus suggested that the lack of understanding of the emotional ambivalence demonstrated by the youngest subjects was also manifest in their discourse errors (or strategies) when responding to a methodology based on interview questions. These strategies can be measured using discourse analysis protocols and are markedly different from the good, age appropriate pragmatic and discourse skills demonstrated by these children in response to questions within their comprehension range.

Expressive language performance errors made by children aged 7– 8 years of age and 10 – 11 years of age.

In contrast to the pragmatic breakdown of the youngest children, the older children broke down linguistically. While the older subjects (7 – 11 years of age) presented with very few of the discourse strategies employed by the youngest subjects, their expressive language showed a higher frequency of linguistic errors not evident in other contexts and linked to specific questions on the interview protocol.

Children in the middle age group (7 – 8 years) made errors predominantly relating to grammar: morphology and word order (syntax). In addition there was evidence of sentence formulation difficulties with numerous hesitations, mazes and revisions. These often affected meaning, sometimes to the extent of making the utterance unintelligible.

This data, showing an underlying linguistic difficulty in the children's reasoning about the emotional problem presented in the stories, matches Donaldson

and Westerman's profile of a child at Level 2 for their thinking of ambivalent feelings, a level appropriate for this middle age group:

*Children at Level 2 recognise that the relationship (between Pepper and the story protagonist in *The Puppy Story*) exists and that it exerts some influence over M's angry feelings. However, they don't know how to assess its relative importance because much of their thinking remains embedded in a Level 1 equation between deeds and feelings.*

*Children at this level are beginning to be aware that anger and love are not simply reactions to different, disjointed events but are part of a more complex interaction that involves an ongoing process. However, since they do not, as yet, understand that love and anger can modify each other, or that the relationship is central, there is a **strained quality** to their answers. (My emphasis). (Appendix 3).*

The transcribed data Donaldson and Westertman use to support their statement showed evidence of the subject's confused (or strained) thinking in terms of their alternating between Levels 1 and 2 in the content of their responses.

It is argued that the sentence formulation difficulties of the British subjects, which reduced the intelligibility of those responses, is a reflection of underlying confused thinking (difficulties with the meaning of ambivalent emotion), especially since the responses were in response to those questions most demanding of the subjects' knowledge of ambivalent feelings.

The expressive performance errors of the oldest subjects (10 – 11 years of age) showed fewer morphological and syntactic errors but continued to show hesitations and revisions indicative of sentence formulation difficulties. However, unlike the 7 – 8 year old subjects, these did not affect the meaning and responses were all intelligible. These subjects were more firmly psychologically and linguistically established in their mature, Level 3, understanding of emotional ambivalence. Their numerous syntactic revisions

appeared to indicate difficulties *expressing* underlying knowledge of ambivalent feelings, unlike the younger subjects where unintelligible utterances reflected their lack of coherent knowledge *per se*.

The mazes and syntactic revisions may also have been a reflection of the ability of the older children to monitor both the meaning and successful expression of their meaning. They were able to persist in their efforts until they were satisfied that what they had said efficiently expressed what they meant

The older (7 – 11 years of age) children's verbal behaviours when answering questions relating to emotions were in marked contrast to their good verbal abilities outside the test situation, both in informal conversation with the interviewer and as demonstrated by formal test scores (CoPS and SATs). This supports earlier research which indicates that the ability to understand ambivalence represents a particularly difficult developmental task which will place considerable strain on children's cognitive and linguistic skills at whatever age they are assessed.

The use of non verbal communication skills when answering interview questions.

Observations of subjects' body language and use of gesture and mime suggested a developmental pattern in children's use of non-verbal communication when answering questions about emotions.

The youngest children (4 – 5 years) employed a number of distraction techniques such as referring to objects in the room but outside of the interview (conversation) topic, and dropping objects on the floor in order to retrieve them and thus distancing themselves physically from the interviewer. Lack of eye contact continued over a number of questions, rather than occurring in response to specific questions or areas of difficulty. In contrast no distraction techniques were observed in the older age groups (7 – 11 years). These

older subjects used facial expressions indicative of puzzlement and body posture such as hunched shoulders, leaning forwards or away from the interviewer. Eye gaze was diverted in response to specific questions.

This developmental difference in response to the interview appears linked not only to general (pragmatic) maturity but also to differences in children's receptive and expressive language skills in relation to the questions asked. The youngest children (4 – 5 years) presented as lacking any understanding of the interview topic (ambivalent emotions and causal theories of emotions). This is reflected in their low scores on the Donaldson and Westerman model. A change in their pragmatic (discourse) skills and non-verbal behaviours could easily be achieved by the interviewer introducing topics which, while related to the research stories, were more immediate and therefore more comfortable for these young children. For example, asking questions about their own family pets as opposed to the unknown puppy/kitten and protagonist in the research stories. The children's attention increased, distraction behaviours ceased and questions were answered appropriately demonstrating good topic maintenance.

This was in marked contrast to their responses to even simple questions relating to single valence feeling states. For example, in the following exchange between the interviewer and a 5 year old subject, only a response of *happy* is required yet the child replies tangentially:

R: But how do you think Molly feels about getting her ball back?

A: Her name's Molly.

The interview questions are all directed at eliciting the child's knowledge of ambivalent emotions through a third party (the story protagonist). Since these very young children have no conscious comprehension of this topic, even simple questions prove confusing.

The middle subject group (7 – 8 years) were able to understand the questions but often did not know the answers. Their expressive language struggles detailed earlier in this section were associated with puzzled facial expressions indicating awareness of their own lack of knowledge. The oldest group of children (10 – 11 years) both understood the questions and the answers but still found it difficult to know how to express this understanding. Their struggles to formulate sentences were associated with body movements such as hunching the shoulders indicative of stress.

It is noteworthy that it is the two older age groups which have the largest proportion of mimed responses: 50% (7 – 8 years); 42% (10 – 11 years); 8% (4 – 5 years) suggesting receptive knowledge requiring additional expressive support for spoken language skills. It may also suggest that for the middle group (7 – 8 years of age) emotion is associated with the bodily expression of feeling as much as, or even more than, it is with the internal feelings states.

The minimal use of mime by the youngest children confirms a lack of awareness of contradictory emotions and that their low scores (levels) for understanding emotional ambivalence and causal theories of emotions do not represent an understanding which they are unable to express. If this is indeed the case then further research might be possible to demonstrate that the children have the ability to understand the linguistic structures and the vocabulary involved, without having the essential psychological understanding of emotion.

It is acknowledged that the reliability of the pencil notes made by the researcher recording the form, frequency and context of the non-verbal behaviours is open to question. However, providing rigour can be incorporated into the recording, the different non-verbal behaviours by the language normal children in response to their different levels of awareness of the interview topic (ambivalent emotions and causal theories of emotions) could be a useful indicator of language disordered children's level of breakdown when responding to the same interview procedures. Do the non-verbal behaviours of the language disordered children suggest an awareness

of complex emotions which their expressive language skills prevent them from conveying (like the middle group of language normal children), or are they more reminiscent of the youngest children's behaviours which suggests an absence of awareness and understanding? Further data on typically developing children's pragmatic and non-verbal communication reactions to the interview procedures would be necessary in order to answer this question.

Critique of methodology

1. Some of the difficulties experienced by the youngest children in remaining on task in the study may reflect a problem in engaging with the protagonist via a tape-recorded story. The use of visual material such as pictures or puppets may have increased both the children's involvement with the protagonist and their attention span.
2. Older subjects occasionally indicated confusion over whether questions referred to the story character's understanding of an emotional situation or their own understanding. It is suggested that this is a methodological flaw in a task requiring the elicitation of a subject's understanding through that of a third person i.e. the protagonist. However, all these subjects demonstrated the ability to quickly identify the nature of their confusion and examine the interviewer and clarify the nature of the questions being asked.
3. An important area for further study is the extent to which the cognitive and linguistic processes identified through the analysis of the verbal and non-verbal data are an accurate indication of the necessary skills for emotional understanding or are artefacts of the methodology. The questions, to a large extent, predetermine the nature of answers supplied. A methodology heavily reliant on an interview protocol may place considerable constraints on the data collected. In addition, interviewees, especially in an adult-child relationship, may respond to questions in a way they think will please the interviewer rather than how they would actually respond to ambivalent

emotions in a naturalistic setting. The study of emotional development in children is generally problematic because of its reliance on methods of this kind. Nevertheless this does not undermine the fact that the children have an understanding of emotional ambivalence and causal theories of emotions even though they may not engage it in a highly charged emotional situation or in the precise form dictated by the interview.

4. Observation of subjects' non-verbal communication suggests that the methodology could be further developed for language normal children by videoing interviews to improve the reliability of the data. Incorporating discourse analysis protocols into the data analysis would allow for a more sophisticated interpretation of subjects' responses to interview questions, indicating those aspects of the task which place the greatest strains on linguistic and cognitive skills.

5. While both the American and British studies showed no statistical differences in subjects' performance on each of the two stories, there are differences between the stories in composition and the interview questions that relate to each one. These are now explored below (5a – 5c).

5a. Both stories (*The Puppy Story* and *The Kitten Story*) are written in two parts. However, the second part of *The Puppy Story* is itself subdivided into two parts relative to the gender of the subject. Male subjects are told that the puppy destroys a plane that the story protagonist (Mike) has spent three days building. Female subjects are told that the puppy destroys some paintings the story protagonist (Molly) has painted and which she liked very much and wished to show her parents.

This division of activities according to gender appears an unnecessary complication of the methodology. Donaldson and Westerman defend this story difference by saying they wish the stories to be as motivating and relevant as possible to all subjects. While building planes could be argued to be a more interesting and valued activity for boys, painting pictures would surely be equally relevant to both sexes. *The Kitten Story* has no such

division according to gender although it is possible to imagine that kittens may be of more interest to girls than boys.

5b. Donaldson and Westerman also state in their 1986 paper *Development of Children's Understanding of Ambivalence and Causal Theories of Emotions* that the stories were written specifically for the study *and were equivalent in length and linguistic complexity* (page 657). However, even a superficial measure analysis shows that this is not accurate. *The Puppy Story* (part one) contains seven sentences while *The Kitten Story* (part one) has nine sentences. Part two of *The Puppy Story* (for boys) has five sentences while part two for girls contains six sentences. Part two of *The Kitten Story* has seven sentences. (See pages 31 and 32 for the stories).

Even a simple linguistic analysis reveals differences in the two texts:

The Puppy Story

Part 1:

Simple sentence = 4

Compound sentence = 1

Complex sentence = 2

Average sentence length = 9 words

Part 2 (boys)

Simple sentence = 1

Compound sentence = 3

Complex sentence = 1

Average sentence length = 10 words

Part 2 (girls)

Simple sentence = 2

Compound sentence = 1

Complex sentence = 3

Average sentence length = 12 words

The Kitten Story

Part 1:

Simple sentence = 5

Compound sentence = 2

Complex sentence = 2

Average sentence length = 12 words

Part 2

Simple sentence = 4

Compound sentence = 3

Complex sentence = 0

Average sentence length = 10 words

(This analysis follows Catherine Renfrew's protocols for *The Bus Story* 1969/1991, 2nd Edition).

5c. In addition, the interview questions and testing protocols for the two stories are different. The interview questions for the first part of *The Puppy Story* are designed to elicit and demonstrate understanding of the basic single emotion love (the story protagonist loves the puppy Pepper). In contrast, the interview questions for the first part of *The Kitten Story* are designed to elicit and demonstrate the subject's understanding and identification of two (albeit single valence) emotions: *sad* and *angry*. The story protagonist is sad at losing their kitten and angry that the window was left open leading to the kitten's loss. In addition the child is asked to identify who the story character is angry at (self and/or mother) and whether it is the same to feel angry with yourself as with your mother. Subjects are also questioned as to what makes sad feelings go away, if they will come back and if so what will bring them back. Further questions ask whether the sad and angry feelings are experienced at the same time or sequentially, and if they mix together or remain separate. In contrast, the questions for the first part of *The Puppy Story* relate only to the identification of love and how that would be expressed by the story character. There are four separate questions in the interview

protocol for the first part of *The Puppy Story* and sixteen separate questions for the first part of *The Kitten Story*.

While all these differences caused no problems for the language normal subjects (no statistical differences were recorded between the stories) they could create additional difficulty for language impaired subjects since it cannot be assumed that the stories are interchangeable or of equal difficulty.

6a. The issues surrounding the adaptation of the methodology for language disordered children are complex. Firstly, the heterogeneous nature of language disorder itself is problematic. Matching language normal children with language disordered children either by Language Age or Mental Age in order to compare responses ignores the variability within the SLI group that would mask critical differences in the language components that are impaired. A range of linguistic/cognitive abilities appear to be implicated in emotional development. Data obtained from language disordered subjects would need to be considered against individual language profiles to assess which specific aspects of their impaired language might be influencing their responses. An assessment such as *The Clinical Evaluation of Language Fundamentals Third Edition (CELF UK 3)* by Semel, Wiig and Secord which considers a range of linguistic abilities, could be used to identify subgroups of language disorder. The responses of these subgroups could then be analysed and compared to each other as well as to the responses of the language normal subjects. This would allow the data from SLI children to identify critical abilities involved in emotional understanding as well as identifying those linguistic and cognitive components underlying emotional difficulties in SLI children.

6b. Secondly, the methodology established by the American authors for use with language normal children is itself language based i.e. dependent on linguistic tasks. If such a methodology is applied to language disordered children, consideration would need to be given to the extent to which difficulties in responding are due to more pervasive language problems such as impaired understanding of "Wh" questions, poor auditory verbal memory, difficulties following narrative sequences, expressive word finding problems

etc. rather than the specific cognitive-linguistic skills highlighted in this study, In other words, any differences in the response of the language disordered children could, it be claimed, merely point to evidence of their language impairment rather than a problem in emotional development as a result of impaired language.

Such objections could be countered by checking the comprehension of “Wh” questions and concept development (especially temporal and spatial concepts to show understanding of questions such as *Does M feel love and anger at the same time, or first one and then another, Do the loving feelings mix together with the angry feelings or do they stay separate*) before proceeding with the interview protocols. Visual materials could be used to illustrate the stories and protagonists and give visual support to verbal memory and sequencing skills. It should be noted that when such supports have been used with language normal children evidence of much earlier awareness of emotional ambiguity has been discovered (see *Children and Emotions*, 1989, by Paul Harris pp. 107 - 126 for an overview). This suggests that the task of putting thoughts about feelings into words is inherently difficult, and that this significantly taxes children’s expressive language skills at any age of development. This is endorsed by the data from this British study which shows how language normal children’s linguistic skills deteriorate when discussing emotionally charged questions. However, the reasons for using visual supports are different for each of the populations (language normal vs. language impaired). For the typically developing children pictures were used to help facilitate the children’s responses to the tasks. For the language impaired children the pictures would support the presentation of the tasks and compensate possible comprehension deficits. More importantly this British data suggests that the nature of the deterioration in typically developing children’s expressive communication skills changes developmentally according to age:

- **4 – 5 years of age**

Expressive pragmatic difficulties associated with lack of comprehension (linguistic and cognitive).

- **7 – 8 years of age**

Expressive language difficulties relating to morphology, syntax and sentence formulation problems (revisions and hesitations) which affect the meaning of the sentence, rendering it unintelligible to conversation partner.

- **10 – 11 years of age**

Expressive difficulties relating to sentence formulation (hesitations and revisions) which affect fluency but not the overall meaning of the sentence.

In future studies these changes could be measured and assessed formally through discourse analysis protocols.

7. The evidence from this study that language normal children experience expressive communication difficulties when discussing ambivalent emotions raises the question of whether the methodology established by the American authors taps into verbal reasoning skills rather than emotional development. In this context, the work of philosophers looking at the relationship between emotion, thinking and language is of interest.

Spinoza's *Ethics* offers two major insights into the emotional life of human beings. Firstly, the nature of emotions as embodied sensation, driven, at least in part, by unconscious forces. Secondly, the idea that emotion is nevertheless a form of thought. For Spinoza, emotion is closely linked with the ability *to know*. This was later developed in Wittgenstein's work. Here, the difficulty in *thinking* resides in the fact that for Wittgenstein emotions are the root of thought (and hence also knowledge). The difficulty of expressing and communicating emotion arises from the complexity, inadequacy and constraints of the *language games* (the verbal and non-verbal communication conventions of the individual's culture) available for the expression of this knowledge.

In the above philosophies, thought can be seen as the medium which translates feeling into an emotion which is encoded in language. The American methodology, although simple in its design, can be used as an initial step in assessing the ability of the individual, at different ages, to make this translation. While the core emotions represented in the stories remain the same, the meaning these emotions have for the individual changes with age. Such a change, it is suggested, is a reflection of increasing emotional awareness and maturity, which is itself dependent on developing cognitive and language skills. The language disordered child may, it is argued, lack the tools (cognitive-linguistic) which allow this change in meaning to take place. An adapted methodology, retaining the underlying premise of the American model of emotional development, but incorporating visual materials to lessen the language load and a design which allows for different aspects of language skills to be investigated, would allow for further exploration of this hypothesis.

Linguistic and cognitive skills required for the understanding and resolution of ambivalent feelings (preliminary findings)

This first British pilot study supports unequivocally the hierarchical model proposed by Donaldson and Westerman for children's emotional development despite the small sample size. However, because the sample size of this British study (12) is so small any conclusions drawn as to the skills required by children to move through this hierarchical model can only be tentative. Nevertheless, it is possible to use these conclusions to form hypotheses which can be tested in further research.

This section proposes that four skills are required by children to progress through a hierarchical model of emotional development during which their previous understanding is re-conceptualised. These are:

1. A change in the type of hypothesis established by the child from simple contradiction to complex paradox.
2. The development of analogical thinking implicit in the acquisition of this new knowledge, and which affords new ways of viewing the world.
3. An increasingly sophisticated understanding and use of temporal and spatial concepts used in their analogical reasoning and non-literal (metaphorical) language.
4. The development of syntactic structures which makes possible the shift in hypothesis from simple (contradiction) to complex (paradox).

These will now be explored more fully.

Change in hypothesis from simple (contradiction) to complex (paradox)

For both the co-ordination of conflicting feelings and casual theories of emotions, irrespective of the child's developmental level, the subject is required to establish hypotheses regarding the feelings of the story's protagonist within a framework provided by the interviewer. For example, in *The Kitten Story* children are asked in scenario A (i.e. when they have spontaneously mentioned conflicting feelings):

How does B feel?

Why does B feel.....(happy)?

Could B feel anything else along with being happy?

Is B feeling both happy and sad? How does that work?

Does B feel happy and sad at the same time or does s/he feel first one and then another?

When B is happy do the sad feelings go away?

A similar set of questions is asked in scenario B (i.e. if the child fails to mention two conflicting emotions):

Will B think about Snowball (previous cat) when s/he sees the new kitten?

If B thinks about Snowball, will s/he stay happy?

Do you think that along with feeling happy about the new kitten, B would also feel a little bit sad?

Could B feel both happy and sad at the same time or does s/he first feel one then the other?

Do the sad feelings over losing Snowball mix together with the happy ones or do they stay separate?

When B is happy, do the sad feelings go away?

Examples of responses in both the Donaldson and Westerman study and this British study suggest that there is a change in the nature of the hypothesis being established by the different age groups. In the early levels of Donaldson and Westerman's model children conceive of conflicting feelings in terms of a simple contradiction i.e. a pair of propositions which cannot both be true:

For The Puppy Story:

The protagonist is loving.

The protagonist is angry.

For *The Kitten Story*:

The protagonist is sad.

The protagonist is happy.

Establishing such a set of contradictions leads the subject to reject one or the other. The replies of the youngest children who are unable to co-ordinate conflicting feelings support this position: the protagonist is *only* angry with the puppy and all the loving feelings have gone; the protagonist is *only* happy with the new kitten and all the sad feelings have gone.

In contrast, the older children in the study establish a hypothesis which is based on a paradox i.e. a pair of propositions which appear to be contradictory but are in fact both true.

The protagonist is angry with the puppy but still loves him.

The protagonist is sad at the loss of his/her cat but happy at being given a new kitten.

Data from this British study, plus examples provided by the American researchers, pose the question as to whether this shift from contradiction to paradox could be dependent in part on the child's increasing language skills. Specifically, emotional maturation emerges in parallel with the child's developing ability to use analogical thinking and an increasingly sophisticated use of complex syntax.

The development of analogical thinking

There are a number of reasons why analogical thinking (verbal reasoning through the use of analogies) may be of particular importance in emotional processing. Firstly, it is proposed that analogy is especially important in making sense of the emotional lives both of the self and others. While we

have the evidence of what people say, and in face to face interaction we have facial expression, vocal level, tone, and physiological evidence, we can never really know what someone else is feeling. In the context of a verbal story the ability to understand what the protagonist is experiencing (empathy) lies predominantly with self examination, i.e. understanding how I would think, feel, and act in a similar situation. We have to rely on hypotheses derived from our own emotional responses and extrapolated to others. Children are required to understand how personal experience can be used to understand the internal lives of others and to develop a generalised idea of how and why people think act and feel as they do (folk psychology).

However, feeling states are therefore relational: my “angry” may be very different from your perception of anger and literal language often appears inadequate to explain what we are feeling when the meanings of emotional labels vary so widely between individuals. A study by Lakoff and Johnson (1980) has shown how frequently metaphors are relied on as a common referential vocabulary to express feeling states. For example, the perception that love is a physical force (*I could feel the **electricity** between us; I was **magnetically** drawn to her*) or a war (*He is known for his many rapid **conquests**; He **fled** from her **advances***) from *Metaphors We Live By*, Lakoff and Johnson 1980.

Secondly, the hierarchical model proposed by Donaldson and Westerman, and supported by the findings of this British study, implies the development of new knowledge during emotional maturation. Analogical thinking as a cognitive instrument of learning would be of considerable benefit to such a model (see Williams, 1988, for a summary of the work on the cognitive roles of metaphor, Stepich and Newby, 1988, for an analysis of the function of analogies as learning aids and Vosniadou and Ortony, 1989 for a more general overview of this area).

It is outside the scope of this investigation to discuss the controversy as to what constitutes analogy and the place of metaphor, simile, image and exempla in such definitions (see Ortony, 1993 for a detailed exploration of this

issue). Each of the many disciplines: philosophy, linguistics, psychology, education, which have explored this area have come to somewhat different conclusions in which no one claim appears to have exclusive rights. Gentner and Jeziorski (1993) state that:

...the central idea is that an analogy is a mapping of knowledge from one domain (the base) into another (the target) such that a system of relations that holds among the base objects also holds among the target objects... Thus, an analogy is a way of aligning and focusing on relational commonalities independently of the objects in which those relations are embedded.

For the purposes of this present argument it is perhaps sufficient to refer to the generally held belief that analogy and analogical thinking are important in the acquisition of new knowledge, and the ability to re-conceptualise existing knowledge (see Richards, 1936; Black, 1962, 1993; Boyd, 1993; Petrie and Oshlag, 1993 for the gradual historical acceptance of this argument).

The evidence from this British study, and supported by examples from the American research, suggests a change in the nature of the hypotheses children make concerning ambivalent emotions and causal theories of feeling states. Such a change in hypothesis would require a movement away from one conceptual scheme, with its associated way of knowing, towards another conceptual scheme with its associated way of knowing. Such a movement is implicit in the role of analogy in learning. In addition, the development of metaphor and analogy in children shows an early focus on surface object commonalties, followed by a developmental shift towards attention to relational commonalities (Gentner, 1988; Gentner and Toupin, 1986).

Donaldson and Westerman's model of children's causal theories of emotions requires just such a conceptual shift from feelings which are wedded to external events towards feelings which are relational to the individual's thoughts, attitudes and memories.

Data obtained in the British and American studies provide evidence of children's analogical thinking in their attempt to mediate external events and internal feelings. For example, in the American research, children at the transitional stage of understanding ambivalent feelings attempt to keep contradictory feelings distinct by separating them along a temporal/spatial dimension. Referring to the protagonist in *The Kitten Story*, one American subject explained that some part of her body is happy and some part is sad. Similarly, in this British study, two out of the four subjects in the older group who were still at the transitional stage in understanding, spontaneously referred to spatial metaphors in their explanations. The protagonist would be: *angry on the outside...but inside she still loves him and: There would be a space there...that the dog used to have. That it would really hurt her feelings if they lost the dog.*

Here, both the American and British subjects explain feeling states in terms of physical sensation which can have a discrete existence within the body, or a physical space within the family unit. In this sense the thinking is analogical. In a similar manner a third British subject in the older age group uses the image of emotions located *in the heart* to explain the distinction between the enduring emotions related to a target and the changeable elements which occur in response to a change in events: *But if he like never finds it at all (the lost kitten) I'm sure the things fade away but in his heart he might still like have feelings for the cat and bit angry with himself.*

The British data also suggest that making emotional understanding explicit is a new and difficult task for the subjects. Responses from all three groups in this British study indicate that the questions asked in the interview push the subjects to the limits of both their receptive and expressive language skills. This would suggest that the subjects are at the extreme boundaries of their explicit knowledge in relation to the questions being asked. The language of the children in the older age groups showed surface features indicative of struggle behaviour such as: pronoun confusion; confusion of real names; rehearsal of sentence syntax; whole word repetitions; omission and substitution of complex conjunctions. These subjects would also, whenever

possible, resort to facial expressions and gesture rather than verbal descriptions of how characters in the story were feeling. Non verbal behaviours such as decrease in eye contact and sighs also gave an indication as to how difficult the subjects found the task.

Children in the youngest age group often required forced choices in order to elicit a response. There was considerable use of gesture and non verbal responses such as nodding and shaking of the head. These subjects required help to remain on task and attend to the story. They would attempt to relate questions to personal experience ignoring the story character or re-tell personal experiences similar to those depicted in the story. Two out of the four subjects showed distraction strategies, such as playing with objects in the room and losing eye contact when questions became particularly difficult. These younger subjects also confused question words and the subject of a question. While it was possible to refocus all the subjects sufficiently to obtain valid data, such behaviours are typical of younger children at the limits of their comprehension.

While the older children had sufficient skills to repair the breakdowns noted earlier, their formulation of replies in terms of analogies may represent their attempts to move into new areas of understanding which are beyond their present ability to use literal language. This view is supported by the work of Sternberg and Rifkin (1979) which suggests metaphors are an important means of expressing ideas for which language may not have any literal terms.

For subjects in the study, the use of metaphoric language identifies an area in their understanding (the phenomenal experience of feeling states) which as yet has no lexical terms associated with it. By taking language associated with external concepts (such as time and space) and applying it to the understanding of internal feelings the child begins to bridge the gap between the behavioural expression of an emotion and its conscious recognition. The child is now able to use language not only to describe the world as it is experienced, but as a tool to represent the world as it is perceived. It is therefore argued that advanced states of emotional understanding, such as

that of ambivalence, which require the re-conceptualisation of the links that exist between situation and emotion is closely associated with the child's re-conceptualisation of the nature of language itself and the consequent development of meta-linguistic abilities. (It is important to stress that the children's verbal behaviours when answering complex questions relating to emotions were in marked contrast to their good verbal abilities outside the test situation, both in informal conversation with the interviewer and as demonstrated by standardised test scores).

Research has shown that pre-school children have the ability to reason analogically in tasks specifically designed to elicit this (Gentner, 1977; Vosnaidou, Orton, Reynolds and Wilson, 1984; Pearson, 1990). However studies by Smith, 1976; Winner, Rosensteil and Gardner, 1976 suggest that the ability to create and use metaphor spontaneously is an ability of much older children. Thus children in the youngest group would not yet have the skills available to use analogical language as a tool for explanations.

Errors, or "slippage", in the children's comprehension might however suggest one way in which the use of expressive analogical language for emotional understanding develops. Two of the four youngest children in the British study confused questions relating to the protagonist's feelings with properties of external objects. For example, one subject, in both *The Kitten Story* and *The Puppy Story*, responded "soft" when asked how the protagonist was feeling. Further questioning elicited that the child was referring to the feel of the kitten and the ball rather than the feelings of the story character. It may be that older children with their more sophisticated meta-linguistic and meta-cognitive skills are able to deliberately use this (originally mistaken) analogous association as a vehicle to convey new, or partial, understanding about the way in which external events are mediated by internal feelings. In other words, the younger child's lack of linguistic skills which leads to the mistaken application of linguistic concepts allows for the development of later meta-linguistic abilities.

This viewpoint is supported by the work of Gardner (1980) who pointed out that early metaphors used by young pre-school children were the result of lexical poverty while those which appeared in adolescence were deliberate violations of category boundaries. The fact that we *can* make mistakes in language develops our sense of language as a potentially flexible medium under the control (or not) of the individual. Once the child has developed sufficient language skills to easily identify mistakes s/he can either correct them or, as in the case of analogy, develop them as a useful expressive tool.

An increasingly sophisticated understanding and use of temporal and spatial concepts.

Analogical thinking is also important if we consider the nature of the psychological task the child is required to carry out to develop their hypotheses regarding ambivalent emotions and how feelings change. Changes in children's ability to co-ordinate ambivalent emotions, and their perceptions as to what causes emotions to change, occur along a temporal and spatial dimension by which real time and space is mapped onto an internal psychological time and space. The child is required to integrate the enduring feelings s/he has for the subject which persist over time with the present emotions triggered by a particular event (temporal dimension). A parallel development occurs by which the child understands that these conflicting emotions, which can be identified and labelled separately in time, also become superimposed and mix together thereby influencing each other (spatial dimension).

Donaldson and Westerman discuss this association in terms of the view that understanding that internal states can mediate emotional responses may be an important component in understanding ambivalence, and also with respect to the possibility that the motivation to integrate conflicting feelings may play a role in promoting the external to internal shift in children's causal theories of emotions. The significance for this British study is that such an increasing association would be helped by analogical thinking in which the relational

commonalities between temporal and spatial concepts become more explicitly understood.

This association of temporal and spatial concepts can also be seen in the widespread occurrence of spatial metaphors for temporal relations in general language use: for example we say *at 3 p.m.* in the same way as we say *at the corner of the road*, also *within an hour*; (*within the room*) *throughout the year* (*throughout the house*); *before Monday*; (*before the first hill*) *towards the end of the month* (*towards the man*); (see Sadock, 1993). This leads Sadock to suggest that the merging of temporal and spatial concepts is a factor of human psychology, perception, and experience rather than a linguistic device whereby some morphemes express both temporal and spatial relations (Sadock, 1979).

In Donaldson and Westerman's model temporal and spatial concepts are gradually associated in emotional understanding i.e. emotions are understood as being experienced *at the same time* and *mixed together*. Further research is required to investigate directly the role played by understanding conflicting feelings in terms of sequential versus simultaneous solutions. However, Sadock's view suggests that children would find spatial metaphors especially useful to develop and express their growing understanding that emotions have a location (the body), can be experienced simultaneously and yet also (older children) relate to ongoing relationships which persist thorough time.

The development of complex syntax

Another area for further study is the role played by complex sentence structure in the hypotheses established by the different age groups. Normally developing children have periods of rapid syntactic growth at either end of the age range 7 – 13 years (Reed, 1986). The change in children's hypotheses from a contradiction to a paradox would at least require the development of compound and complex sentences. Sophisticated syntax using subordinate clauses and conjunctions such as *before*; *after*; *but*; *if*; *except* and *unless* is

able to convey the complex relationships and/or temporal concepts inherent in paradoxical hypotheses (see Bowerman, 1979, for an overview of co-ordinating and subordinating conjunction development).

In the British and American data, very young children who were unable to co-ordinate conflicting emotions eschew co-ordinators altogether in their hypotheses and simply reject one of the conflicting propositions. Children at the transitory levels require only the second earliest emergent coordinator (Bloom et. al. 1980) for the resolution of their hypothesis: *The protagonist loved the puppy **and then** s/he was angry; The protagonist was sad **and then** s/he was happy.* Children at the highest level of emotional maturation would require more complex syntactic development to express contradiction such as adversative conjunctions e.g. *but, although: Mike was angry at the Puppy **but** he still loved him; Bill was sad at losing Snowball **although** he was happy to get a new kitten.*

In conclusion, movement through the levels of emotional understanding may be dependent not only on a conceptual re-evaluation of existing knowledge through hypothesis testing, but in having the increasing cognitive and linguistic skills with which to frame such a re-evaluation.

Implications for language disordered children

Change in hypothesis from simple (contradiction) to complex (paradox)

Previous research has showed that SLI (specific language impaired) children have difficulties with hierarchical reasoning and hypothesis testing (Kamhi, 1981; Ellis Weismer, 1991). If normally developing children progress in emotional understanding by means of developing hypotheses then SLI children will be at a serious disadvantage.

Research conducted since Donaldson and Westerman's 1986 study has confirmed the importance of hypothesis testing in emotional development and places emotional maturation within the general development of the theory of mind (Premack and Woodruff, 1978) – a theory about the psychological processes that underlie everyday social activities.

Research by Harris, 1987; Astington, Harris and Olson, 1988 and Harris and Gross, 1988, has shown that two of the key components of that theory – beliefs and desires – not only help the child to predict another person's actions, but also make sense of another's person's emotions and emotional displays. Several other researchers (e.g. Smiley and Huttenlocker; Stein and Trabasso; Gnepp; in C. Saarni and P. L. Harris (eds.), *Children's Understanding of Emotions*, 1989) have also gone on to show how the child's understanding of emotion borrows from, and contributes to, the child's general theory of mind within a framework of hypothesis testing. It is possible therefore, that the difficulty SLI children encounter in establishing hypotheses, which are an integral part of the developing theory of mind, could in itself result in a delay in emotional understanding.

The development of analogical thinking

A study of non-literal language comprehension by Vance and Wells (1994) showed that SLI children were not following the normal developmental path whereby such comprehension develops in line with receptive language. This study was originally designed to establish whether a subgroup of SLI children, namely those with a (so-called) semantic pragmatic disorder (SPLD), could be discriminated by their response to a task of non-literal language comprehension. It was argued that the SPLD children might experience greater difficulty than either a control group of normally developing children of a similar receptive language age or SLI children whose impaired development was not in the areas of semantics and pragmatics. Results showed no significant difference between the language impaired groups (i.e. SLI plus SPLD) and the control group. Further testing revealed no significant

difference between the SPLD and the non-SPLD subgroups of SLI children (although the SPLD group did perform marginally better).

However, while a correlation was found between receptive language scores and non-literal scores in the normal control group, no such correlation was found for the SLI plus SPLD group, which also showed a wide range of scores and large standard deviations. The authors suggest that this finding indicates that some individual SLI children, both SPLD and non-SPLD have a specific problem with non-literal comprehension. While this points to the heterogeneity of language skills and deficits in the SLI group (and the methodological difficulty of working with groups matched by language-age) it also provides evidence that some SLI children may experience a specific difficulty with non-literal language development. This in turn may have implications for these children's ability to use non-literal language in emotional verbal reasoning tasks.

An increasingly sophisticated understanding and use of temporal and spatial concepts.

A number of studies have looked at language disordered children's difficulties with temporal and spatial concepts. Wiig, Semel and Crouse, 1973; Moran and Byrne, 1977; Wiig and Semel, 1976, 1984; all provide evidence for language disordered children's problems with tense formation in verbs. Wiig and Semel (1984) report that language disordered children often misinterpret statements involving reference to the past and future. Furthermore such children's spontaneous language shows an inadequate control and consistency in the use of linguistic devices to place events appropriately in the past, present and future. The finer distinctions of time and meaning denoted in English by complex verb forms, such as "has been" are even more difficult for these children to interpret and use (Wiig and Semel, 1976, 1984).

The relationship between the development of spatial cognitive competencies and "spatial language" has been the subject of considerable debate. Cromer

(1991) formed the conclusion that the requisite cognitive development precedes and provides the conditions for the establishment of appropriate linguistic development.

A study by Gillies and Light (1997) compared the spatial abilities of school age SLI children with an age matched control group of normally developing children. The study indicated that the SLI children were experiencing difficulties with spatial vocabulary although no specific details were provided by the authors. Results showed that the SLI children out performed the language normal chronological age-matched group in their ability to use drawn plans. This slight, but significant, superiority in a non-verbal spatial problem solving task suggests the possibility of compensatory processes (c.f. Lewis and Beard, 1993) for tasks which can be presented visually to the children. For the purpose of emotional development however, the important factor would be the child's ability to apply spatial concepts in analogical thinking.

Spatial terms and temporal words (such as *over/under*, *first/last* and *before/after*) have been found to be particularly problematic for SLI children (Kavale, 1982; Riedlinger-Ryan and Shewan, 1984; Wiig and Semel, 1976, 1984). There are several likely reasons why these words are especially troublesome. First, the word referents are not readily apparent through the senses, such as vision, which tends to make them relatively abstract. Furthermore, the words obtain meaning only in relation to something else – an object or perceptual view point. Finally, the words are typically deictic in nature. That is, the referents change depending on the relationship of the speaker to the event. It is argued that all three of these component difficulties are particularly relevant to the use of temporal and spatial linguistic concepts in emotional hypothesis testing where it is the relational commonalities of the concepts which are important as well as the point of view of the person who is conceiving them.

Language disordered children often have semantic difficulties in the comprehension and use of words: these include inflexible word-meaning

associations and word retrieval problems (see Reed, 1986; Wiig, 1982). Such difficulties would make analogical thinking difficult for these children and especially difficult using poorly represented linguistic concepts relating to time and space – both of which appear to play a significant role in the development of emotional understanding.

Donaldson and Westerman's assessment of children's understanding of, and ability to resolve, ambivalent emotions takes place within the context of a narrative. Narratives, of course, have a specific temporal framework in which characters and events are linked in a sequence of cause and effect. *The Puppy Story* (page 31) has a very simple narrative structure. Two characters (child and puppy) are viewed over one day interacting in two events: finding a ball (morning) and destroying a plane/paintings (afternoon). Despite the simplicity of this story line one of the language normal subjects, a boy aged 7 years (JB) found it difficult to keep the temporal structure of the story in place when answering the interview questions. It was necessary on two separate occasions to remind JB of the timing of events:

Example 1

(R = Researcher; JB = male subject aged 7 years)

R: *...how did Mike feel towards Pepper in the morning? When he found the toy?*

JB: *Uh.....still mad.*

R: *Why was he mad in the morning? This was before he chewed his plane up.*

B: *'Cos he couldn't use it any more.*

R: *What his (□) ...which one?*

JB: *Plane.*

R: *His plane. That's right. If you remember he was flying his plane in the afternoon but in the morning he was looking for his ball. And Pepper found Mike's ball. How do you think Mike felt in the morning then when Pepper had found his ball?*

(JB goes on to correctly identify loving feelings)

Example 2

(R = Researcher; JB = male subject aged 7 years)

R: *So when he found the ball do you think he was happy or sad or normal?*

JB: *Normal.*

R: *OK. Normal. I think when we talked about it before you said that sometime ()...you thought Mike might have felt a little bit happy.*

JB: *Yeah. But that was before. And he...um...he chewed up his plane.*

R: *Oh right. But he didn't...he didn't chew up his plane until later on that day. So when Pepper had found the ball he didn't know he was going to chew up his plane later on. Yeah?*

JB: *Yeah.*

R: *So how do you think he felt then? When he'd found the ball?*

JB: *Happy.*

It is not possible to know whether JB's difficulties were a specific failure of memory or relate to a desire to simplify the emotional content of the story by altering it such that there is less ambivalence regarding Mike's feelings towards the puppy. Certainly JB was able to retell both parts of the story fluently and accurately before beginning to answer the interview questions. However, his difficulties, as a language normal subject, highlight the difficulties a SLI subject might have who is already experiencing problems with temporal concepts as a result of disordered language development.

The development of complex syntax

Green (1979) challenges the view that analogical reasoning and non-literal language are essential for acquiring new knowledge. Instead he states that such abilities may be: *sometimes needed...oftentimes...useful but not absolutely necessary*. He comes to the conclusion that the ability to learn something new is quite possible *through traditional concepts of argument and inference*. However, language disordered children's difficulties with compound, complex and multi-transformational sentences (see Wiig and Semel, 1984; Clarke, 1973; Wiig and Fleischmann, 1980) may make it difficult both to form increasingly complex hypotheses in regard to emotional reasoning *and* to use these alternative props of argument and inference.

In conclusion therefore, while language disordered children, like their normally developing peers, are fully able to experience conflicting emotion, unlike their non language impaired peers they may not have the language skills available to facilitate access to advanced levels of emotional reasoning. Such children would present as emotionally immature, struggling within earlier contradiction type hypotheses of emotional processing.

CONCLUSION

This British replication of the American research has shown that the developmental model proposed by Donaldson and Westerman is a good basis for investigating British children's ability to understand and resolve ambivalent feelings in that:

- both studies showed highly significant statistical trends;
- interview response data show similar patterns of response for both British and American children. For example, both British and American children's use of metaphor at the transitional stage between level 2 and level 3 thinking for understanding ambivalent emotion.

However, further research on language normal children is required before the methodology can be applied to children with disordered language development. Specifically, the need to investigate how far the profile of cognitive and linguistic skills described in this pilot study is specific to the understanding and resolving of ambivalent emotions. The following skills have been inferred as contributing to children's ability to understand and resolve emotional ambivalence:

- the ability to change from a simple contradiction hypothesis to a complex paradox;
- the development of analogical thinking expressed in the development and use of personal experience, folk psychology and metaphor;
- sophisticated understanding and use of temporal and spatial concepts resulting in a predominance of spatial metaphors as children's emotional understanding develops (Levels 2 and 3 of Donaldson and Westerman's model);

- the development of complex syntax, such as the understanding and use of conjunctions, which provides the linguistic framework for the change in the nature of the hypothesis established by the child.

How far are these skills *necessary* for this emotionally complex task or simply coincidental in children's general cognitive and linguistic maturation? Are these skills *sufficient* for the task of understanding complex contradictory feelings or are there other, as yet unidentified, skills also implicated?

It is also important to analyse to what extent, and in what ways, processing and answering questions on ambivalent emotions affects children's expressive communication skills, both in terms of spoken language and pragmatic communication (discourse skills). Only when baseline data for normally developing children has been established can a comparison be made with language disordered children's skills on a similar task.

A second, larger, study was therefore conducted with normally developing children and with the following adaptations to the Donaldson and Westerman methodology.

- Both the American Donaldson and Westerman study and this British study found that the youngest age group (4 – 5 years) were unable to identify ambivalent emotions. Therefore for this second study only the two older age groups (7- 8 years and 10 – 11 years) would be included. However data already obtained from the youngest children (4 – 5 years) would be a useful comparison for language disordered children if they were found to be significantly delayed in their understanding and resolving of ambivalent emotions.
- Video as well as audio tape recording would be used during the subject interviews. This would enable non-verbal communications such as facial expression, eye contact, gesture and mime to be more reliably included for analysis. Struggle behaviour, reflected in body language,

may be an indicator of which questions/where in the interview children experience the most difficulties. Any developmental changes would also be identified. The non-verbal behaviours of typically developing children in response to the interview procedures could be compared to that of language disordered subjects and provide additional information on where and why language impaired children experience difficulties.

- Discourse analysis protocols would be included to assess children's responses to the interview questions in terms of their expressive and pragmatic language skills. This would allow for any differences relating to both the interview questions asked and age of subject to be noted. Questions which are highly demanding of children's cognitive and expressive language skills, and which affect their expressive communication, would be identified.
- A comparison task, using a different type of ambiguity, would be introduced in order to isolate the cognitive and linguistic skills relating specifically to ambivalent emotions. This task would take the form of a story, specially written for this study, that contained a linguistic ambiguity. A separate set of interview questions, similar to those written by Donaldson and Westerman for their American study on ambivalent emotion, would also be written in order to elicit the children's ability to identify and resolve this linguistic ambiguity. Comparisons could then be made relating to differences in the children's abilities on the two tasks of ambiguity (emotional vs. linguistic) plus any differences in their non-verbal communication skills, discourse skills and expressive language skills when responding to the two tasks. Any developmental changes between the two subject age groups would also be noted.
- Only one of the two stories written for the American study (*The Puppy Story* and *The Kitten Story*) would be required for this comparison study. However, unlike the original Donaldson and Westerman study,

both the selected American story (emotional ambivalence) and the story specifically written for this study (linguistic ambiguity) would be balanced in terms of length and linguistic complexity. Although no statistical differences were found between the two American stories, despite differences in their narrative length and sentence structures, data from this second study would be directly compared with data from SLI subjects. While differences in length and linguistic complexity may not affect children with typically developing language skills, they are likely to have an effect on language disordered children's performances and so would need to be controlled for in the study.

- Formal assessment of the typically developing subject's language skills would be included in the methodology of this study. The *Test of Word Knowledge (TOWK)* by Wiig and Secord (1991) was selected since it provides information on those language skills already identified in the preliminary British replication study as possibly underlying tasks involving the identification and resolving of emotional ambiguity. This test includes synonyms, figurative language such as metaphors and idioms, all of which would be necessary to develop analogical thinking skills, and also conjunctions and transition words necessary for developing complex syntax required for more sophisticated hypotheses. Testing of language disordered subjects using the assessment would provide additional information on differences between typically and atypically developing children's language skills which could be matched with differences in performance on the two tasks of ambiguity (emotional vs. linguistic).

A detailed account of this second study comparing language normal children's performance on two tasks of ambiguity (emotional and linguistic) is given in the following chapter (Chapter 3).

CHAPTER THREE
LANGUAGE NORMAL STUDY

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INTRODUCTION

Aim of Study

The aim of this second study was to compare the linguistic and cognitive skills typically developing children use when identifying and resolving two different types of ambiguity: emotional ambivalence and linguistic ambiguity. This was to see if one kind of ambiguity was more difficult than the other to resolve at two different ages, namely 7 – 8 years of age and 10 – 11 years of age.

The study based its procedures on those established by Donaldson and Westerman in their 1986 research investigating typically developing children's understanding of contradictory emotions (emotional ambivalence) and causal theories of emotions (what causes feelings to change). This required children to answer interview questions relating to two stories, *The Puppy Story* and *The Kitten Story*, in which the story protagonist experiences ambivalent emotions towards a pet (love/anger for a puppy and sad/happy for a kitten). This study has been fully described in Chapter 2.

For this second study a story was written by this author that contained a linguistic ambiguity (pronoun confusion). This story is reproduced on page 121, this Chapter. Subjects' responses to this story were then compared to those of one of the American stories which contained ambivalent emotion. Both experimental tasks, namely the understanding and resolving of emotional ambivalence and the understanding and resolving of linguistic ambiguity were matched for linguistic complexity. Developmental changes between the two subject age groups for both tasks were also explored. The study based its methodology on the following assumptions related to the experimental task and subjects' responses to the experimental task.

The experimental task

- Although it is postulated that linguistic development is related to emotional maturity the linguistic demands of both tasks could be controlled so that they were equally demanding. By ensuring that both stories and interview questions were equal in terms of syntax, semantic and lexical complexity, differences and/or difficulties in these areas recorded in subject's responses could be assumed to relate to differences in the cognitive demands of the two tasks.

Subjects' responses to the experimental task

- Linguistic errors and discourse errors are sufficient indicators of the areas of ability on which the two tasks make the greatest psychological and cognitive demands.
- Analysing linguistic errors is an adequate measure of the demands made on the child's meta-cognitive abilities. This rests on the claim that the tasks are (as far as receptive abilities) linguistically very similar and that it is the cognitive demands that differ.

Intention of study

The intention of the second study was to then investigate how far the developing profile of cognitive and linguistic skills described in the study detailed in Chapter 2 was specific to the understanding and resolving of ambivalent emotion at a given age. These developing skills were inferred from the data gathered as part of the British replication study of the American research (Chapter 2) and are reiterated here:

- change in hypothesis established by the child from a simple contradiction to complex paradox;
- development of analogical thinking;
- increasingly sophisticated understanding and use of temporal and spatial concepts, especially the use of spatial metaphors;
- the development of complex syntax, such as the understanding and use of conjunctions, which provides the linguistic framework for the change in the nature of the hypothesis established by the child.

The following developmental models and procedures were used to explore the skills listed above.

1. Change in hypothesis established by the child from a simple contradiction to complex paradox.

The original American research investigated a four stage sequence in children's understanding of emotional ambivalence. A separate part of the American research assessed children's causal theories of emotions (what makes emotions change). Both these developmental models outlined changes in children's thinking, specifically the hypotheses they hold in regard to their own and others' emotions.

In this next study reported here a further replication of the American research was carried out using one of the original stories. In addition, the data generated by a second and newly created story which presented a linguistic

ambiguity was then explored and used to devise a developmental model for children's identification and understanding of surface structure ambiguities within a narrative, specifically pronoun confusion. Comparison was then made between the children's changes in thinking on the two tasks of ambiguity.

2. Development of analogical thinking.

Children's responses which included the use of metaphors, similes and imagery were noted in the transcripts. For the purposes of this research all such examples were categorised under the general heading of *metaphor*. Any other evidence of children using analogies in their replies to questions was also noted. This included subjects using personal experience as a basis for predicting a protagonist's thoughts, feelings or actions. It also included any attempt made by the child to refer to a general theory of human behaviour (folk psychology). Comparisons were then made between the use of analogical reasoning when replying to questions relating to emotional ambivalence and linguistic ambiguity.

3. Specific use of complex spatial metaphors.

Increasingly sophisticated understanding and use of temporal and spatial concepts including the use of metaphor whereby external attributes and perceptions become associated with abstract internal psychological states. For example, in the case of metaphor there is a development from the simple association of physical attributes (hair is like string or spaghetti) towards the application of physical attributes to describe psychological states (the prison guard was hard hearted).

Analogical thinking, especially the use of metaphor, is likely to be a useful tool considering the psychological nature of the task the child is required to carry out by the experimental study. Understanding what causes emotions to change and co-ordinating contradictory emotions requires the child to have a sophisticated understanding of both temporal and spatial concepts and then apply these to abstract mental states. For example, two of the questions asked in the interviews written by the American researchers required an understanding of the language of time and space and how these concepts could be mapped on to internal feelings states:

Question based on temporal concepts

Would (the story protagonist) feel both love and anger (*The Puppy Story*) / sad and happy (*The Kitten Story*) at the same time or does s/he feel first one and then the other?

Question based on spatial concepts

Do angry (sad) feelings mix together with loving (happy) feelings or do they stay separate?

It was noted by the researcher that many of the examples given by the American authors Donaldson and Westerman of children's responses to these questions contained metaphors. Due to the nature of the experimental task spatial metaphors would be especially useful tools for co-ordinating both the temporal and spatial elements of ambivalent emotions. (Ambivalent emotions have to be understood as distinct feelings which are experienced internally at the same time towards the same target but then interact and have to be related to relationships which span a longer time frame). Any spatial metaphors used by the child were therefore marked in the transcript.

4. The development of complex syntax, such as the understanding and use of conjunctions, which provides the linguistic framework for the change in the nature of the hypothesis established by the child.

The British replication study had noted expressive language performance errors when subjects replied to questions relating to complex emotion. The type of error appeared to change with age. Children's expressive language was therefore analysed for performance errors indicative of strain placed on the child's abilities due to the cognitive demands of the experimental tasks. Such analysis provided information on the subjects' developing linguistic abilities and also developmental differences in the types of errors which occurred.

The British replication study conducted by this researcher had also noted developmental differences in children's non-verbal communication and discourse (conversation) skills when completing the experimental task relating to emotional ambivalence. For this second study procedures were therefore introduced allowing for the gathering and analysis of data relating to these communication skills. This analysis compared the children's pragmatic skills (non-verbal communication and discourse abilities) on the tasks of understanding and resolving emotional ambivalence and linguistic ambiguity.

An account of the changes made to the original American materials and procedures to accommodate the requirements of this second study are given in the Method section (Part 1) page 114.

Research Predictions

General predictions:

Results from the analysis of data relating to the emotional ambivalence task would replicate findings from the original American research and the British pilot study. This second British study would then be compared with the analysis of data obtained from the linguistic ambiguity tasks. It was predicted that between the age of 7 years and 11 years children's responses to questions requiring an explicit understanding of a) linguistic ambiguity (pronoun confusion) and b) emotional ambivalence (love/anger) would show differences in the number and type of linguistic performance errors made.

Specific predictions

Comparing age and task:

- children in the older age group (10 – 11 years) would score at higher levels than the younger children (7 – 8 years) for both the linguistic ambiguity task and the emotional ambivalence task.
- children in the younger age group (7 – 8 years) would score at higher levels for the linguistic ambiguity task than for the emotional ambivalence task.
- children in the younger age group (7 – 8 years) would produce more discourse errors than the older children which affected the meaning of a sentence, rendering it unintelligible to the conversation partner (researcher). These were classified as Relation category errors relating to illogical, incoherent or unintelligible utterances.

- children in the older age group (10 – 11 years) would have discourse errors predominantly related to sentence formulation difficulties (e.g. repetitions, hesitations and mazes) which affected fluency but not the overall meaning of the sentence. These were classified as Manner category errors relating to linguistic non-fluency and revision.
- for both tasks expressive language performance errors would be classified according to the lexicon, syntax, semantics and phonology. The number of errors would be counted for all children on both tasks. It was predicted that a greater number of errors across all four domains would be found for the emotional ambivalence task than the linguistic ambiguity task.
- a comparison would be made of the total number of performance errors (discourse plus expressive language performance errors) for both tasks between age groups. It was predicted that a greater number of errors across all domains would be found for the younger group.

It should be noted that no predictions were made regarding the profile of cognitive and linguistic skills described in the study detailed in Chapter 2 and outlined earlier in this chapter. These skills had been inferred from the data and at this stage it was unclear exactly how they might be expressed in the children's responses to the interview questions.

METHOD

Part 1: Adaptation and Trial of Material for Study

Adaptation of Experimental Materials

Story Selection

Since only one story relating to emotional ambivalence was required in order to compare with a story containing a linguistic ambiguity a choice had to be made between *The Puppy Story* and *The Kitten Story*. A number of issues were considered when deciding which story would be the most suitable to use. These will now be explored below.

No statistical differences were found between subjects' responses to the emotional ambivalence stories: *The Puppy Story* and *The Kitten Story*, both in the 1986 American study and this author's replication study. It could therefore be assumed that both stories place similar demands on typically developing children's processing of ambivalent emotions. However, differences in the structured interviews devised for each story showed differences in the cognitive and linguistic demands the two stories placed on the subjects.

The interview questions for the first part of *The Kitten Story* required the subject to identify two distinct feelings experienced by the story protagonist:

- sadness at the loss of his/her kitten Snowball
- anger that a window was left open through which the kitten escaped

The subject is asked to identify both these emotions. In addition the subject is

questioned about the nature of the anger felt by the protagonist: is the anger directed internally at the self because s/he left his/her window open, the mother who failed to notice the open window, or the kitten which took the opportunity to escape through the window. The subject is also questioned about the quality of the anger experienced by the protagonist and whether the anger feels different if it is directed inwards at the self or outward towards the mother/kitten. The subject is also asked to differentiate between the feelings of anger and sadness both in terms of how they feel inside and how they would look on somebody else's face (i.e. how the emotions are identified in the self and in others). Lastly the subject is questioned to find out if they know that two emotions of the same valence (i.e. not contradictory emotions) can be experienced at the same time and influence each other:

- Would B feel angry and sad at the same time or first one and then the other?
- Do angry feelings mix together with sad feelings or do they stay separate?

(Please see Appendix 1 which contains the complete interviews for both *The Kitten Story* and *The Puppy Story*).

In contrast, the interview questions used for the first part of *The Puppy Story* require subjects to identify only one emotion: love. The difference in the demands made on the subjects by the two stories can be seen reflected in the number of questions asked: 16 questions relate to the first part of *The Kitten Story* and only 3 questions to the first part of *The Puppy Story*. No explanation or rationale for this difference in the protocols for the two stories was provided by the American authors, Donaldson and Westerman, either in their 1986 paper or in the detailed Methodology and Procedures supplied to this author by Dr. Westerman.

The aim of this author's second study was to compare the cognitive and linguistic demands made on children when resolving emotional ambivalence and linguistic ambiguity. The structured interview for *The Puppy Story* relates only to emotional ambivalence (love/anger). In contrast, the structured interview for *The Kitten Story* questions subjects on their understanding of different emotions of the same valence (angry/sad) in addition to the contradictory emotions sad/happy. For the purposes of this second study the use of *The Puppy Story* would therefore be preferable, dealing as it does with the single task of emotional ambivalence which could then be matched to a single task relating to linguistic ambiguity.

The difference in the information required from the subjects by the interview questions for the first parts of *The Kitten Story* and *The Puppy Story* was also reflected in narrative differences between the two stories. *The Puppy Story* has both a simpler event structure (the things that happen in the story) and temporal framework (the time course, or duration of the story) than *The Kitten Story*.

In the first part of *The Puppy Story* there are only two characters, the protagonist and the puppy and only one event – the puppy retrieves a favourite ball that the story protagonist has lost. In *The Kitten Story* there are three characters – the protagonist, his/her mother and the kitten. There are then two events which, while linked, are distinct and create different emotions in the story character – a window is left open and the kitten escapes and is lost.

The Kitten Story also has a more complex temporal framework. *The Puppy Story* takes place over a single day. The first part is set in the morning and the second part is set in the afternoon. In *The Kitten Story* the first part focuses mainly, but not exclusively, on the events of one day during which the protagonist goes to school and the kitten escapes from the house. However, it also introduces a longer time course at the very end of the first part of the story:

B looked for Snowball day after day, week after week.

The second part of *The Kitten Story* extends over a whole year culminating in the protagonist's next birthday. *The Puppy Story* thus has two distinct time sequences over a single day: part one in the morning, part two in the afternoon. *The Kitten Story* follows a much longer and more variable time course. The first part of *The Kitten Story* relates a day's events and then sets them in the context of several weeks (while the character searches for the kitten). The second part of *The Kitten Story* starts in the continuous present with the protagonists' feelings of sadness at the loss of the kitten and the discussion he/she has with parents regarding these feelings. The story then shifts to reflecting on the future (wanting a new kitten and the protagonist's approaching birthday) and then moves forward to an immediate present (the protagonist's actual birthday when he is about to see his/her new kitten). This involves a number of changes in tense from past, continuous present and future.

A further level of complexity in the text of *The Kitten Story* was also noted. In *The Kitten Story* the ambivalence of Bill's feelings is expressed in the actual text of the story (and hence syntactic structures) as well as in the events themselves. In *The Puppy Story* the ambivalent emotions are conveyed only through the events of the story. So, for *The Puppy Story* there is a simple event structure:

Mike loves Pepper who finds Mike's favourite toy he had lost. (Part one)

Mike is angry at Pepper who has destroyed a plane Mike has spent three days making. (Part two).

Mike's feelings, how and why they change, and ultimately the ambivalence of his feelings, have to be causally inferred from his probable reaction to these two events. In *The Puppy Story* only two references are ever made to Mike's

feelings. In Part one it is said that he *likes to play with Pepper* and in Part two it said that *Mike liked it* (the plane) *very much*. Mike's love for Pepper in Part one rests upon the assumption that children love their pets and this is evidenced in the story by Pepper's behaviour towards Mike: Pepper is said to follow Mike everywhere, finds Mike's favourite toy, wags his tail and drops the ball at Mike's feet - all suggesting that Pepper is behaving like a loved dog. When Pepper chews up Mike's plane no reference is made to Mike's feelings. The subject listening to the story is expected to infer Mike's feelings from the *events*. However, these events and the feelings generated are likely to be very familiar to children.

In contrast, in part one of *The Kitten Story*, there are statements and indicators of Bill's thoughts and feelings through his actions and behaviours: we are told that Bill had wanted a kitten for a long time, was very happy when he finally got the kitten, told all his friends Snowball was the best kitten in the whole world, and that when he lost Snowball he looked for her *day after day, week after week* all implying considerable affection for Snowball and sadness at her loss. In addition, in part two there are also explicit references to Bill's mixed feelings regarding the possibility of having a new kitten:

He talked to his parents about wanting a new kitten. But he also said that a new kitten just wouldn't be the same as Snowball.

Thus in *The Puppy Story* Mike's feelings, including ambivalent feelings, are inferred from externally observable events. In *The Kitten Story* the externally observable events are bolstered by explicit references to Bill's internal thoughts and feelings, including those thoughts which express his ambivalent emotions as reproduced above. However, such explicit reference to ambivalent feelings requires complex sentence structures and use of complex conjunctions, for example the use of the adversative connective *but* in the above passage. In

contrast, only a causal link is required to co-ordinate the two external events in *The Puppy Story*: Mike is angry with Pepper *because* he destroyed Mike's plane. (More complex adversative conjunctions such as *but*, *however*; *although* were of course required to co-ordinate Mike's internal feelings about Pepper). The use of the more complex conjunctions for the narrative of *The Kitten Story* would represent a greater difficulty for language disordered subjects to access, apart from those who had specific strengths in the area of syntax, including the understanding of conjunctions.

The typically developing children who took part in the American study and the British replication study found no difficulty with either the complex event structure or the more complex temporal and syntactic framework of *The Kitten Story*. No statistical differences were found between the responses for the two stories. However, the purpose of this second study was to isolate cognitive and linguistic skills which are specific to the resolution of emotional ambivalence. It was therefore important that cognitive demands were, as far as possible, limited to this one task. Following complex event and time structures in a narrative was likely to make additional demands on subjects' cognitive and linguistic abilities which could mask or mislead the identification of those skills necessary for resolving ambivalent emotions. For this reason also, *The Puppy Story* would therefore be the most suitable to use in the second study.

Story Texts

In order to compare the cognitive and linguistic skills children use when identifying and resolving emotional ambivalence with those used when identifying and resolving a linguistic ambiguity a story was written by this author called *The Twins Story*. This story featured two protagonists who are twins and contained a linguistic ambiguity (specifically an ambiguity of surface structure – pronoun confusion) where it is unclear which of the twins is being referred to. Both *The*

Twins Story and *The Puppy Story*, which contains the emotional ambivalence, are reproduced below.

The critique of the American methodology detailed in Chapter 2 (page 75) noted the gender differences in the second part of *The Puppy Story*. For girls, the ambivalent emotions were generated by the puppy destroying her paintings. For boys, the feelings resulted from the destruction of a model aeroplane. It was concluded that this was an unnecessary complication and therefore no such gender differences were used in *The Twins Story*. A change in the American protocol was considered whereby both girls and boys would be read the second part of *The Puppy Story* relating to destroyed paintings. However this was eventually discounted since it would then preclude any direct comparison between the American and British subjects' scores for understanding emotional ambivalence and for their theories about what causes feelings to change. By keeping the protocols the same for *The Puppy Story* it would be possible to show that these British subjects were following the same developmental rate and pattern of response as the subjects in the original American study and the British replication study.

***The Puppy Story* (Ambivalent emotions: Anger/Love)**

Part One

Mike/Molly has a dog named Pepper. He/she likes to play with Pepper who follows him/her everywhere. One morning Mike/Molly went outside to look for a ball that he/she has lost. Pepper followed him/her outside as usual. Soon Pepper came over to Mike/Molly wagging his tail. Pepper had found the ball. He brought it over and dropped it at Mike's/Molly's feet.

Part Two (which introduces the ambivalent emotion)

For Boys

Later on that afternoon, Mike decided to launch his favourite model airplane. He had spent three days building this plane and liked it very much. He invited his parents to see the plane's first flight. Mike sent the plane up in the air, it soared over the yard and began to land in the grass. Just then, Pepper rushed in after the plane and chewed it up.

For Girls

Later on that afternoon, Molly decided to show her paintings to her parents. She has spent a long time making these paintings. She liked them very much. She laid them out on her bed and went to get her parents. While she was out of the room, Pepper rushed in and chewed them all up. When Molly came back, she found that all her beautiful pictures had been wrecked.

***The Twins Story* (linguistic ambiguity: pronoun confusion)**

Part One

Roland/Rosie and Colin/Caroline are twins. Roland/Rosie likes playing on his/her roller-blades. Colin/Caroline enjoys computer games best. It will soon be Christmas. Roland/Rosie wants some new roller-blades and Colin/Caroline wants some new computer games. However, the twins' parents say that they will buy an expensive present for only one twin this Christmas because they can't afford two expensive presents. They promise instead to buy the other twin an expensive present when it's his/her birthday, as well as an inexpensive present for Christmas.

Part Two (which introduces the linguistic ambiguity)

It is Christmas Eve and Roland/Rosie and Colin/Caroline are in bed. Very quietly s/he gets out of bed and creeps downstairs. Everyone else is asleep. S/he has his/her slippers on so that his/her footsteps can't be heard. The family presents are piled up under the tree but s/he finds a present without a name on it. Although it's not Christmas day, s/he opens the present and finds a pair of roller-blades.

Analysis of Stories

For the purposes of this second study, comparing children's skills in understanding different types of ambiguity, it was important that the two stories were matched as closely as possible in terms of length and linguistic complexity. This was not the case with the two American stories used in the original research into children's understanding of ambivalent emotions. The American authors, Donaldson and Westerman, had stated in their 1986 paper that *The Puppy Story* and *The Kitten Story* were "equivalent in length and linguistic complexity" (page 657, Development of Children's Understanding of Ambivalence and Causal Theories of Emotions, 1986). However, no information was given about the basis for this claim. Even a superficial measure analysis of linguistic complexity using Catherine Renfrew's framework devised for her test of a continuous narrative (*The Bus Story*, 1969/1991 2nd Edition) revealed differences in the complexity of the sentence structures and the use of conjunctions in the two stories. In addition, both parts one and two of *The Kitten Story* were longer than those of *The Puppy Story*. Differences were also found in average sentence length.

The Twins Story was written to match the length and linguistic complexity of *The Puppy Story*. It was decided to base this on the analysis framework designed by

Catherine Renfrew, referenced above. There were a number of reasons for this. Firstly, the framework used by Renfrew in *The Bus Story* was designed specifically to analyse a continuous narrative. This takes the form of a spoken reproduction of a written text presented verbally with picture support. It would therefore be suitable for analysing and comparing narrative text in the form of short stories which are presented verbally to children and who are then required to reproduce them in their own words. Although this study with language normal children did not use pictures, this use would be a possible factor when considering the adaptation of materials for language impaired subjects.

Secondly, *The Bus Story* has a long and robust history of use as a formal assessment in Speech and Language Therapy which provides evidence of its sensitivity and usefulness as a means of analysing linguistic structures. In addition, the framework provides the flexibility needed to write a story which makes sense semantically and is able to accommodate a linguistic ambiguity, with enough rigour to detect linguistic differences between stories. This ability of the framework to be sensitive to linguistic difference can be seen in the fact that it was able to detect differences between *The Puppy Story* and *The Kitten Story* despite the statement by the authors that they were identical. A summary of the analysis of *The Puppy Story* and *The Kitten Story* using the Renfrew framework is given below.

The Puppy Story number of sentences:

Part 1 = 7

Part 2 (for boys) = 5

Part 2 (for girls) = 6

Linguistic analysis:**Part 1**

Simple sentence = 4

Compound sentence = 1

Complex sentence = 2

Total number sentences = 7

Part 2 (for boys)

Simple sentence = 1

Compound sentence = 3

Complex sentence = 1

Total number of sentences = 5

Part 2 (for girls)

Simple sentence = 2

Compound sentence = 1

Complex sentence = 3

Total number of sentences = 6

The Puppy Story average sentence length:**Part 1****A5LS = 9****Part 2 (for boys)****A5LS = 10****Part 2 (for girls)****A5LS = 12****The Twins Story number of sentences:****Part 1 = 7****Part 2 = 6****Linguistic analysis:****Part 1****Simple sentence = 4****Compound sentence = 1****Complex sentence = 2****Total number sentences = 7**

Part 2

Simple sentence = 1

Compound sentence = 3

Complex sentence = 2

Total number of sentences = 6

The Twins Story average sentence length:**Part 1**

A5LS = 13

Part 2

A5LS = 11

Matching the stories

The first parts of both *The Puppy Story* and *The Twins Story* have the same number of sentences (7). The second part of *The Puppy Story* has a different number of sentences depending on whether it relates to a girl protagonist or a boy protagonist. Since this gender split served no useful purpose in terms of the aims of this second study no such gender split was written into part two of *The Twins Story*. However, since in *The Puppy Story* part two for boys and part two for girls did not match in terms of length or linguistic complexity there was no possibility of making an exact match with the second part of *The Twins Story*. The second part of *The Twin Story* was then written with the proviso that it should not be longer or more linguistically complex than the longest and most complex part two of *The Puppy Story*. This was achieved in terms of length with 6 sentences in both part two of *The Twins Story* and part two of *The Puppy Story*.

for girls.

The first parts of *The Puppy Story* and *The Twins Story* have the same proportion of simple, compound and complex sentence structures. The second part of *The Twins Story* has the same number of simple sentences (1) and compound sentences (3) as occurs in part two of *The Puppy Story* for boys. The number of complex sentences (2) in the second part of *The Twins Story* is mid way between that for boys (1) and girls (3) in *The Puppy Story*.

The average sentence length (11 words) for part two of *The Twins Story* is mid way between that for boys (10 words) and girls (12 words) in the second part of *The Puppy Story*. However, it should be noted that the average sentence length for part one of *The Twins Story* (13 words) is longer than that for part one of *The Puppy Story* (9 words). This was necessary in order for *The Twins Story* to make sense semantically and provide the subjects with enough information in part one of the story to produce a convincing narrative in part two which could accommodate the linguistic ambiguity.

This difference in average sentence length between parts one of *The Twins Story* and *The Puppy Story* might account for the performance differences found in the younger readers of the stories for the audio tapes. The experimental task required subjects to listen to audio taped recordings of *The Puppy Story* and *The Twins Story*. These were recorded by a boy and girl of the same age range as the two subject groups: 7 – 8 years and 10 – 11 years. It was noticeable that for the younger readers *The Twins Story* required more attempts than *The Puppy Story* to record fluently. This was especially true of the reading of part one of *The Twins Story* by the younger girl. The number of attempts at recording is given below:

Boy reader aged 8 years:

Mike and Puppy:	Roland and Colin:
<u>Part 1</u>	<u>Part 1</u>
1	3
<u>Part 2</u>	<u>Part 2</u>
2	5

Girl reader aged 7 years:

Molly and Puppy:	Rosie and Caroline:
<u>Part 1</u>	<u>Part 1</u>
1	9
<u>Part 2</u>	<u>Part 2</u>
1	1

For both the girl and the boy the difficulty in recording part one of *The Twins Story* resided in a fluent reading of the last two (and longest) sentences of the story.

When reading part two of *The Twins Story* the boy spontaneously commented that he found it difficult to read because the story was:

“..confusing. It don’t make sense. I keep trying to work out who opened the present so forget to read well.”

(Pencil note made by researcher during session)

This shows that for this boy it was the confusion produced by the linguistic ambiguity in the story which caused differences between his readings of the second parts of each story rather than any difference in syntactic complexity between the two texts. The older boy and girl both aged 10 years required only a silent read through of each text before they made a fluent recording of the two stories with no need for retakes.

This difference in average sentence length between the first parts of the stories was, after consideration, allowed to stand. This decision was based on the prediction that it would be easier for children to identify and resolve linguistic ambiguity than emotional ambivalence. An analysis of children's responses to the stories which supports this claim would be strengthened and not weakened by *The Twins Story* having more complexity (in this case in terms of average sentence length) than *The Puppy Story*.

This argument was also used when comparing the narrative and temporal structures of the two stories. *The Puppy Story*, as discussed earlier has a simple narrative in terms of the events which occur and the time scale in which they take place. In *The Puppy Story* there are two characters, the protagonist and the puppy and the events, finding a ball and then having a loved possession destroyed, take place over a single day: morning (part one) and afternoon (part two).

In *The Twins Story* there are also two characters (twins) but both the narrative and temporal structures of the first part of the story are more complex than those of the first part of *The Puppy Story*. The first part of *The Puppy Story* establishes that the protagonist loves the puppy and this is reinforced by the puppy finding a favourite toy the protagonist had lost. In contrast to this simple narrative the first part of *The Twins Story* contains more information which the research subject is required to remember:

- it is approaching Christmas
- the twins enjoy different activities
- the twins want different Christmas presents (roller blades and computer games)
- the parents are unable to afford expensive presents for both twins
- only one twin will get the present they want for Christmas
- the other twin will get a less expensive present for Christmas
- this other twin will get their desired present on their next birthday

This complex narrative information is embedded in a complex temporal framework. In part one the twins are anticipating the future (Christmas) which is impacting on their present emotions since only one twin will receive the gift they want. Subjects are asked to identify the twins' emotions which also require them to imaginatively project into the twins' future in order to work out how the twins are feeling in the present. The narrative of part one of *The Twins Story* therefore crosses both the present and the future, unlike part one of *The Puppy Story* which takes place entirely within one time period – the morning.

The second part of *The Twins Story* is however comparable to the second part of *The Puppy Story* in terms of the event and temporal structure of the texts. Both contain only one main event: the destruction of a loved toy/the opening of the Christmas present and take place within a single defined time period, the afternoon (*The Puppy Story*) and Christmas Eve (*The Twins Story*).

The emotion depicted in part one of *The Twins Story* is more complex than that in part one of *The Puppy Story*. The twins' emotions could cover a range of feelings including anger, sadness, worry and anxiety. Indeed they may even experience ambivalent emotions towards Christmas: happy and excited that they will be on holiday and have presents from friends and relatives, as well as anxious and sad at the thought that they may not get the main Christmas present

they are hoping for. They may also feel ambivalent towards their sibling wanting the present for themselves but also recognising that this will result in disappointment and sadness for their twin. In contrast, the protagonist in part one of *The Puppy Story* feels only love which is directed towards the puppy.

These differences between the first parts of the two stories were allowed to stand. The purpose of part one of each story is to introduce the characters and set the scene for the ambivalence/ambiguity which will occur in part two. In *The Puppy Story* the subject needs to identify that the protagonist loves his/her puppy. In *The Twins Story* the subject needs to realise that only one twin is going to get the Christmas present he/she wants for Christmas. In *The Twins Story* the emotions of the twins in part one are irrelevant to the purpose of the story which is to assess for the understanding of linguistic ambiguity in part two. Subjects will not be scored on their ability to identify the twins' emotions in part one.

It was not anticipated that the children's expressive language would show more performance errors when responding to part one of *The Twins Story* than part one of *The Puppy Story* even though the emotions portrayed in *The Twins Story* are more complex. This is because the structured interview for part one of both stories does not question the children about contradictory emotions. This only occurs in part two of *The Puppy Story*. Children who name ambivalent emotions in *The Twins Story* were likely to be the older and/or more mature subjects who would do so spontaneously. Younger or less mature subjects may not be developmentally ready to name ambivalent emotions and may name simpler feelings. Again, because there are no probing questions in the interview at this stage the child is not required to confront their lack of knowledge or struggle towards a more complex understanding. Their responses are therefore likely to be linguistically fluent.

The American protocols allowed subjects to be helped through the use of

comprehension questions if there was anything in the stories they didn't understand. They could therefore be helped if they found the more complex narrative and temporal structures difficult to follow. Subjects could hear the stories as many times as they wished. The researcher was allowed by the protocols to pose Wh questions (*who, what, where, when, why*) to prompt the subjects' memories or to identify parts of the stories they were finding confusing and which could then be clarified. Alliteration was also used in the first part of *The Twins Story* to aid verbal memory. The twins desired Christmas presents are associated with the initial sound of their names: Roland/Rosie wants roller blades and Colin/Caroline wants computer games.

If a difference in subjects' performance errors was found between part one of *The Puppy Story* and part one of *The Twins Story* the responses could be looked at in detail and a judgement made as to the possible reason for the difference:

- the children were struggling with a receptive awareness of the more complex emotions in part one of *The Twins Story* which they found difficult to convey expressively. Even though this was not specifically required by the structured interview questions.
- the children found the complex temporal narrative of part one of *The Twins Story* cognitively and linguistically demanding and this was expressed in a larger number of performance errors when responding to the structured interviews.
- the difference in the children's performance related to the difference in average sentence length between part one of *The Twins Story* and part one of *The Puppy Story*.
- all of the above, or combinations of the above, were impacting on the

children's ability to respond to the interview questions which resulted in an increase in performance errors in their expressive language.

- other confounding variables were operating which resulted in the differences found in children's responses to the first part of the two stories.

Any differences found in children's use of cognitive and linguistic skills between the first parts of the two stories could also be judged against the above considerations. Further research could then be conducted to clarify this.

In conclusion, while there were some differences between the first parts of the two stories these were not anticipated to cause significant differences in the subjects' responses to the structured interviews. Indeed, if differences were found in responses to part one of the stories then this could be considered an added argument for the sensitivity of the procedures to identify differences in children's use of cognitive and linguistic skills for different tasks. The main purpose of this second study would not be affected by these differences in part one of the stories since the study concerns the identification of different cognitive and linguistic skills used to resolve linguistic ambiguity and emotional ambivalence which rests on analysis of children's responses to part two of the stories. Where differences in the stories do exist they are weighted towards *The Twins Story* as the more complex. If the prediction that children would find identifying and resolving emotional ambivalence more demanding than linguistic ambiguity was proved then *The Twins Story* as the more complex linguistically and cognitively would strengthen the argument that there is something peculiarly demanding about understanding and responding to ambivalent emotions (the simpler *Puppy Story*) as opposed to other cognitively challenging tasks represented in *The Twins Story*.

The Structured Interviews

A structured interview was written by this author to elicit subjects' understanding of the linguistic ambiguity in *The Twins Story*. This interview was written to complement the one written by the American authors Donaldson and Westerman to elicit children's understanding of emotional ambivalence. An analogous approach was used with questions matched as closely as possible in both interviews. For example the questions for the first part of both stories are identical since this part of each story serves only to introduce the context for part two which contains the ambiguity/ambivalence. Please see Appendix 5 which reproduces the structured interview for *The Twins Story*. The structured interview for *The Puppy Story* is reproduced in Appendix 1. Both parts of the interviews which deal respectively with the emotional ambivalence and linguistic ambiguity had the same number of questions (14).

Both structured interviews for part two start with 3 questions which establish what has happened in the second part of each story and gives the child an opportunity to spontaneously identify the emotional ambivalence of the character or the linguistic ambiguity in the narrative. Both interviews then continue with two separate sets of questions depending on the child's response: *Scenario A* questions and *Scenario B* questions.

Scenario A questions are given to those subjects who spontaneously name the ambivalence/ambiguity and are designed to explore further the nature and extent of the child's understanding. *Scenario B* questions are given to those subjects who fail to mention the ambivalence/ambiguity. These questions are probes designed to confront the child with the possibility of ambivalence/ambiguity.

In the story about the puppy the child was reminded of the protagonist's loving feelings in the morning and then his/her anger in the afternoon. The child was then questioned to see if s/he denied these juxtaposed feelings, or made an

attempt to resolve the contradiction. In the story of the twins the child was questioned about their knowledge of the story and the basis of their assumptions about which twin went downstairs: does the story explicitly state which twin went downstairs, if it does where does it do this, if it doesn't how can the twin's feelings on opening the present be known? For *Scenario B* questions, the degree to which the child was pushed to confront the ambiguousness of the feelings/identity of the story protagonist was taken into account when giving a score (level) for their understanding. This was in accordance with the American protocols.

Consideration was also given to the way in which the structured interview introduced the subjects to the possibility of linguistic ambiguity in *The Twins Story*. The subject was asked (question number 3):

How does the character in the story feel when s/he opens the present?

The phrasing of this question could be construed as deliberately misleading and place a considerable pragmatic constraint on the child's possible response. By asking how the character felt when s/he opened the present there is an underlying assumption that this person can be known and named. This however is false since it is impossible to tell from the story who opened the present (the linguistic ambiguity). Conversational conventions, such as those originally proposed by Grice (1975) which are based on the principle of co-operation and shared responsibility for meaning do not allow for this deliberate falsification of questioning:

Try to make your contribution one that is true.

Do not say what you believe to be false.

(Grice, 1975)

The exception to this rule is when it is done for a specific communicative purpose

such as sarcasm or deception, neither of which was the case here. The interviewing procedures for both stories told the child that the purpose of the interview was to find out how someone of their age thinks and talks about feelings. It would therefore be reasonable for the child to assume that, in this context, no sarcasm or intentional deception was intended.

However, when considering the possible impact this question may have on subjects' replies, further thought was given to this area of communicative competence. It could be argued that the context of a structured interview on a research topic would not necessarily follow the normal rules of an informal conversation. The research subjects were questioned in school by an adult. Child - adult interactions in a school context often take the form of testing where the adult may employ sarcasm or deliberately mislead in order to force the child to demonstrate explicit knowledge (Mehan, 1979; Cahir & Kivac, 1981a; 1981b; Green & Wallet, 1981; Wilcox, 1982; Philips, 1983; Peterson & Wilkinson, 1984; Cazden, 1988; Green & Harker, 1988; McCollum, 1989). This pragmatic bias in an educational setting could alert the child to challenge the meaning of the question with the interviewer.

All effective communication seeks to avoid breakdown in meaning by recognising when the speaker has failed to be explicit, or when the listener has failed to understand, and seeks to repair this (Rogers-Adkinson & Griffith, 1999). This conversational maxim was tested by Donahue (1997) who looked at the responses of school age language normal pupils and language impaired pupils when presented with an inadequate message during a conversation. Typically developing children used active strategies such as asking the speaker for clarification or making explicit to the speaker their confusion. In contrast the language impaired children were more likely to assume the responsibility for the breakdown in communication believing that the confusion lay in their failure to understand. These pupils were more likely to use passive strategies such as waiting for the speaker to explain or trying to listen more carefully.

This ability of typically developing children to actively clarify misleading or inadequate information was confirmed by the readers who audio tape recorded *The Twins Story* for presentation to the research subjects. Three of the four readers: the younger boy and girl and the older boy, spontaneously questioned the researcher about the story's ambiguity. None of these readers had been questioned about the story.

Since the subjects in the second study are all typically developing children it is likely they would employ active strategies such as questioning the interviewer when confronted with the impossible question of naming the twin who opened the present. This questioning would itself show that the child had spontaneously identified the linguistic ambiguity and understands its impact on the story meaning and so lead the interviewer into presenting *Scenario A* questions. In addition, the video recording of the subjects would show facial expressions or body movements' indicative of confusion as the subject listens to the audio recording of the story. A further check on the child's level of understanding even before the questions are asked is provided by their re-telling of the story in their own words. This is part of the original American protocol used to check children's verbal memory, narrative sequencing skills and understanding of the story. The re-telling of the second part of *The Twins Story* would provide information on how the child perceives, or not, the linguistic ambiguity, by how it was re-phrased in their re-telling.

As well as considering the impact question 3 might have on the subjects' responses, consideration was also given as to rephrasing the question. For example the question:

How does the character in the story feel when s/he opens the present?

could have been written as:

Can you tell how the character in the story feels when s/he opens the present?

Although this would avoid the misleading aspect of the original question it would constitute a level of probing not matched in the structured interview for *The Puppy Story*. In order to compare and analyse differences in children's responses to the two stories it is important to match as closely as possible the structured interviews. Since *The Puppy Story* allowed children to demonstrate the ability to co-ordinate contradictory emotions without this possibility first being raised by the interviewer, the same opportunity had to be given when subjects were questioned about *The Twins Story*. This allowed similar levels of understanding to be compared by the scoring criteria. If the child was misled by the question then this would be clarified by the *Scenario B* probe questions allowed in the protocols for both stories. Also, if children were still able to respond more fluently to questions on linguistic ambiguity which are more pragmatically demanding than the questions on emotional ambivalence, this would provide additional support for the argument that there is something specific to ambivalent emotions which causes children's expressive language to break down.

The structured interview for *The Puppy Story* was devised to elicit scoring criteria for understanding and resolving emotional ambivalence. An account of how the linguistic ambiguity scoring criteria for *The Twins Story* was arrived at is now given below.

Linguistic Ambiguity Scoring Criteria (*The Twins Story*)

The Twins Story was written by this author specifically for this second study. The intention was to compare the responses of typically developing children of different ages to questions presented in the form of an interview. Questions sought to elicit the level of the child's understanding of two different types of

ambiguity: linguistic ambiguity presented in *The Twins Story* in the form of pronoun confusion and emotional ambivalence presented in *The Puppy Story* in the form of contradictory emotions (love/anger).

The scoring of *The Puppy Story* followed American procedures and assigned an ambivalence level for each child on a rating system of 0 – 3. See Chapter 2, page 33 for an account of this scoring system and also Appendix 3. For *The Twins Story* a similar scoring system was devised by the researcher. However, it is important to make clear that the two systems are not completely analogous. This is because knowledge of linguistic ambiguity and knowledge of emotional ambivalence, while related, is not simply a replication of the same knowledge in a different form. Linguistics and emotions are separate domains. The point of this research is to explore how the development of one domain (emotion) may be dependent on that of the other (language).

The task devised was one in which the child was questioned about an ambiguity presented in each domain: emotional and linguistic. While American research had already elicited a model for children's understanding of emotional ambivalence, no such model existed for children's understanding of linguistic ambiguity. It was therefore not possible to predict in advance the developmental stages in that understanding or how closely that developmental model would resemble the model for the understanding of emotional ambivalence.

It is known that the development of children's recognition of linguistic ambiguity due to pronoun confusion takes place over a roughly similar time scale as that identified by the American authors for emotional ambivalence. Bearison and Levey (1977) asked children to assess as "good" or "bad" questions which referred to previous utterances. Some questions contained ambiguous pronouns. For example: *Jane got a bicycle for Christmas and Mary got a new coat. What did she get for Christmas, a bicycle or a new coat?* The ambiguous questions were generally accepted by the children of 5 – 6 years of age (28 per

cent rejection). At age 7 – 8 years the rejection level was approximately the same as that of random choice (58 per cent). It was not until age 9 – 10 that such questions were rejected by a significant number of the children (85 per cent). Pratt and Bates (1982) showed that the presence of pictures provided little assistance to 5 – 6 year old subjects in this type of test. This suggests that the inadequacy of evaluation is not linked to problems with memory.

Karmiloff-Smith (1979a, 1979b, 1981, 1985, 1986, and 1987) has attempted to construct a model of the stages leading to the functional implementation of intra-textual determiners. In the initial period, before the age of 6 years, children do not try to establish cohesion between sentences and use pronouns in an exclusively deictic manner. In the next stage, the use of anaphoric pronouns (i.e. where an antecedent is referred to) becomes established. This is an example of the children's growing ability to monitor the cohesion of narratives they produce. However, it is not until 9 – 10 years of age that this function is generalised. Gombert (1992) has made the observation that this model is too general and does not permit the appearance of different levels of awareness to be dated to an exact age, or say exactly how this awareness will be realised and expressed. Indeed Esperet and Cahrier (1985) showed that the same subjects produced differing performances in different situations with narratives, as opposed to single sentences, proving one of the most complex contexts for the detection of linguistic ambiguities.

Lack of information regarding the way in which children of different ages would express differing abilities in their detection and understanding of linguistic ambiguities in a narrative posed difficulties when considering a scoring system for subjects' responses to *The Twins Story*. When designing the experimental task, the interview for *The Twins Story* was structured to closely match that written by the American authors for *The Puppy Story*. This included probe questions designed to elicit the child's most advanced thinking. For *The Puppy Story* this involved reminding the child of the protagonist's earlier love for the

puppy and contrasting it with the feelings after the treasured item(s) (plane/paintings) had been destroyed. For *The Twins Story* this involved asking the child how they obtained their knowledge of who opened the Christmas present i.e. as in *The Puppy Story* the child was confronted directly with the ambiguity of the story in an attempt to further their thinking.

The interview for both stories thus assumed that the child's understanding would follow a similar course for both types of ambiguity and that this would be based on a growing (meta-cognitive) awareness of the contradictory information presented in the two stories. However, until data had been gathered this remained only an assumption. The developmental model on which the scoring system for *The Twins Story* was based was thus not finalised until *after* the data had been collected from the subjects.

The developmental model for the identification and understanding of linguistic ambiguity within a narrative (pronoun confusion) is given below. Actual examples of subjects' responses are given to clarify the 4 levels, or stages, in the children's thinking. The two raters who independently scored subjects for their understanding of linguistic ambiguity were given this model with examples of typical responses for each stage. These examples were specially created by the researcher for training purposes. Raters were also asked to note responses by subjects which they did not think fitted any of the stages presented in the model. No such responses were noted by either of the independent raters. The American model for understanding and resolving emotional ambivalence is reproduced first for comparison.

Understanding emotional ambivalence

Level 0 – Children able to identify single feelings but not aware that multiple, including contradictory, feelings exist.

Level 1 – Children recognise that multiple, even contradictory feelings exist but typically only talk about the experience of conflicting feelings when probed.

Level 2 – Children begin to realise that contradictory feelings can be experienced towards the same situation or person, but they don't know how to reconcile or understand these ambivalent feelings.

Level 3 – Children understand ambivalence and recognise that feelings can be understood in terms of a wider context within which they impinge upon and influence one another.

Understanding linguistic ambiguity (pronoun confusion)

Level 0 – Children not able to score on their responses because of limited or unclear data. For example the children's responses are incoherent or illogical or they repeatedly answer *I don't know*.

Level 1 – Children unable to demonstrate any recognition of linguistic ambiguity, even with probing.

Children at this level denied there was any ambiguity in the story. They were happy to identify one of the twins as opening the present. When challenged as to how they knew it was that twin who opened the present, they gave no indication of confusion.

A typical response at this level is the child who when pressed explained that it must be Rosie because it said Rosie liked roller blades (and the opened present is revealed to be the roller blades). When probed further to say where exactly in the story does it say Rosie opened the present, the child replied *its where..she opens roller blades so I just think that in my mind and it must be Rosie*. When asked if the story names the character who opened the present the child replied *I can't remember. I think it does*. Further probing when the child was asked if there was anything at all confusing about the story elicited a negative response *Mmm..not really. No*.

Characteristics of this level are that the child not only definitely identified a particular twin as opening the present, but also denied that there was any confusion present within the story.

Level 2 – Children able to demonstrate explicit recognition of linguistic ambiguity with probing, but then rationalise that ambiguity.

Children at this level were aware of the ambiguity in the story. They identified the pronoun confusion which occurred at the point when the narrative fails to specify the name of the twin going downstairs. However, subjects then persisted in resolving this ambiguity by providing their own “solution” to the “problem” of ambiguity.

Responses within this level showed a developmental progression towards increasingly more text based solutions to the problem of ambiguity. Both age groups used their knowledge of stories and story structure to help their understanding and resolution of the linguistic ambiguity. They worked on the assumption that stories are not designed to be intentionally ambiguous – they are always meaningful. The children then used a variety of devices to help “solve” the ambiguity.

Younger, or less skilled children at this level, searched for meaning outside of the narrative, and subject to their own idiosyncratic viewpoint such as believing Rosie is more inquisitive than Caroline, and so would be the twin who goes downstairs and opens the present (a moot point is if this is caused by the subject's response to an unspoken alliteration *Rosie = nosy*). Older, or more skilled children at this level, searched for meaning within the narrative giving a syntactic reason for their identification of a specific twin (namely that *Caroline/Colin* is the last twin mentioned in terms of word order before the ambiguous sentence: *Very quietly s/he gets out of bed and creeps downstairs* is heard). Subjects at this level also recognised a joint, communal view point that is shared with the researcher and appealed to this, viewing the ambiguity as a puzzle which has a solution and to which the researcher holds the answer (*Come on Miss..you can tell me*).

A typical level 2 response to *The Twins Story* is the child in the younger age group (7-8 years) who said that although the story doesn't tell you who opened the present they knew it was Caroline because *Caroline sounds like she would not be naughty*. Or, naming Colin: *Well um..I would have thought Colin would have gone down to open the presents because he wanted..he was..would have been so anxious to see who got the present*. Both these assumptions: Caroline not being naughty, Colin as the more anxious/curious twin, have no factual basis in the story presented to the child.

Children referred to the tone of voice of the narrator on the audio tape claiming that it sounds sad or happy (depending on which twin the subject has identified:*Because it's sort of..it didn't sound like..or the tape didn't sound like it..was.....Rosie 'cos it sounded a bit..sad*. (Having identified Caroline as the twin opening the present).

Children used their experience of story convention to help them identify the character opening the present. Two of the younger male subjects chose Roland

as opening the present *To make the story more interesting. ..you want it exciting story.* Children chose a specific twin to give either a sad or happy ending *because stories are like that* (i.e. have a definite emotional ending). One of the younger male subjects referred to the story as a mystery story: *I think it's mysterious.* When asked why he thinks this he replied *'Cos some like to do that in stories.*

Children at this level sometimes misinterpreted the interview question: *Where in the story did it say X opened the present?* replying *in the night or in the living room* creating an additional, unintentional ambiguity.

Older children at this level referred specifically to linguistic reasons for choosing a particular twin, namely word order. The children identified that the story is confusing because it doesn't tell you the name of the twin *and you have to think..but.. 'cos there's probably lots of different reasons to think..probably lots of ways. I think its because he* (i.e. Colin) *was a'..last mentioned.* This refers to the opening of the second part of the story when the linguistic ambiguity is introduced:

*It is Christmas Eve and Roland/Rose and Colin/Caroline are in bed.
Very quietly he/she gets out of bed and creeps downstairs.*

The subject's reference to thinking was typical of this type of resolution through syntax, and points to increasing meta-cognitive and meta-linguistic skills. Younger children who named which twin opened the present and who used non syntactic reasons: *Rosie... 'Cos she wanted roller skates* also made reference to thinking when asked if there was anything confusing about the story, although this was less common than with the older children. For example: *..'cept for one part where it says "she" 'cos you don't know..which one and you're thinking..um..which one? And how are they gonna tell you it later in the story?* This shows the developing meta-linguistic and meta-cognitive skills required for

more advanced interpretations of the story's confusing ambiguity.

Level 3 - Children spontaneously demonstrate explicit recognition of linguistic ambiguity.

Children at this level typically showed, by verbal and non verbal means, an instant recognition of the linguistic ambiguity. Such children looked puzzled and made intense eye contact with the researcher as they listened to the audio tape recording of the second part of the story. They would actually talk over the audio tape at the point the ambiguity is introduced: *it doesn't say who went downs (sic) though does it* (said quietly to self). As soon as the tape was ended they would question the researcher: *What one went downstairs again?* and requested a second listening of the tape. When, as part of the protocol, they re-told the story they would have a puzzled expression on their face and phrased their re-telling: *one of the twins creeps downstairs* (placing vocal stress on the word *one*).

Children at this level responded easily and fluently to the question *How does the character in the story feel when s/he opens the present?* using complex *if..then* sentence structures: *if he was the one that (laugh) wanted roller blades he'd feel really happy..um..if he wasn't he'd probably feel a bit gutted.*

The younger children at this level recognised that the story was breaking what they regarded as the normal story telling conventions: *..its confusing 'cos well you don't know who went downstairs..'cos they didn't tell us..and..um..so..its confusing 'cos we don't know where..as in proper story we would and its kind of a quiz.*

Children at both level 2 and level 3 were able to suggest a variety of ways of making the story less confusing e.g.:

- say the name of the twin going downstairs

- give a clue in the first part of the story - say who was born first and then say the eldest
- say only one twin has slippers or say what kind of slippers they both have (giving them different slippers such as rabbit/crocodile slippers)
- give them different voices

However, it is only children at level 3 who were able to remain in a state of ambiguity without persisting in resolving that ambiguity through giving either intra- or inter-text reasons for a named twin opening the present.

Adaptation of Experimental Procedures

Changes to American Protocols

Five changes were made to the American protocols established by Donaldson and Westerman in their 1986 research.

1. Exclusion of American vocabulary.
2. Stories were audio tape recorded by children of the same age range and sex as the subject.
3. Subjects were video recorded.
4. Language assessment of all subjects after the experimental tasks had been completed.

The first adaptation was used in the British replication study detailed in Chapter 2. All other changes were specific to the second study detailed in this present Chapter.

1. For this second study one story (*The Puppy Story*) was used which had previously been written for the American study. The other story (*The Twins Story*) was written by this author. The same version of *The Puppy Story*, interview questions and Debriefing protocol as used in the first British replication study was used in this second study (i.e. excluding Americanisms). As in the first study it was noted that the British subjects themselves used the synonymous *mad/angry* in their responses even though this had been restricted to the use of *angry* in the British version of the interview questions. This suggests a similarity of language use in

terms of vocabulary between the British and American subjects.

2. No information had been provided by the American authors Donaldson and Westerman regarding the tape recording of the American stories (*The Puppy Story* and *The Kitten Story*). It was assumed that an adult had audio recorded the stories for presentation to the subjects. For this second British study one of the stories, *The Twins Story*, contained a linguistic ambiguity. In order to control for the effect described by Sonnenschein (1986) where children were far more likely to accept ambiguity in a message if spoken by an adult rather than a peer, both stories were audio tape recorded by children who were in the same age range and the same sex as the subjects, but who did not otherwise participate in the study (i.e. one girl aged 7 years, one boy aged 8 years; one girl aged 10 years and one boy aged 10 years). The readers were selected by school staff and presented with good average reading skills. All 4 readers had British English as their only language experience. See page 166 for further details about the story readers. Over half of the younger subjects and a third of the older subjects spontaneously mentioned the name of the reader, recognising the reader as a peer. One of the younger boys spontaneously named the reader and said that he thought this boy was trying to trick him because the name of the twin who went downstairs was not mentioned. This suggests the child is trying to understand why the story is ambiguous and making a link between the ambiguity and the intention of the person recounting it
3. For this second study each of the experimental sessions was video as well as audio tape recorded. The American protocols had specified audio recording only. Video recording was introduced in response to the non-verbal findings of the first study. These findings showed that subjects used mime to support their expressive language skills when replying to interview questions. Subjects also indicated by facial expressions and

body language periods of increased levels of psychological stress when confronted with cognitively demanding questions relating to ambivalent emotion.

4. The American researchers had assessed subjects' verbal intelligence through the Information, Vocabulary and Similarities subtests on the *Wechsler Intelligence Scale for Children*. For the British replication study and this second study subjects' general cognitive levels were determined by the results of formal education assessments. See this Chapter, page 168 and also Chapter 2 page 26 and Appendix 2 for further details. In addition, subjects in this second study had their receptive and expressive language skills assessed by this researcher. Assessment was carried out using The *Test of Word Knowledge (TOWK)* by E. H. Wiig and W. Secord (1991). The following subtests were administered: *Synonyms, Figurative Usage, Multiple Contexts* (multiple meaning words) and *Conjunctions and Transition Words*. These subtests were selected as reflecting the linguistic and meta-linguistic skills required to successfully complete the experimental task (the ability to understand, use, and manipulate analogy and complex syntax structure). This assessment provided additional rigour to the research protocols ensuring that all subjects were within the average range for those language skills inferred to be in most demand by the experimental tasks. This language assessment also provided additional comparative data for typically developing children and SLI children in the third study (see Chapter 4).

Transcription of Subject Interviews

The American protocols required the preparation of verbatim transcripts from audiotapes of the subject interviews. No account was given by the American researchers of the methods used in these transcriptions, such as who did the

transcribing, if the transcriptions were validated through inter-rater reliability measures and what conventions were used in the transcribing.

For this second British study additional levels of analysis were carried out on the subjects' transcripts than had been the case for the American research. This included analysis of discourse (conversational) errors and expressive language performance errors. This additional analysis of subjects' responses to interview questions necessitated a high level of transcription accuracy, higher than that required for the American research which did not assess subjects' expressive language performance or non-verbal communication.

For this second British study the researcher made verbatim transcripts of the subjects' audio and video taped interviews. (See pages 179 – 182 for the transcription conventions used). In order to assess the accuracy of these transcriptions the researcher randomly selected a transcribed utterance from each of the 32 subjects which could be considered corrupted and difficult to decipher. This corruption could take a number of forms: drop in volume of subject's spoken language, grammatical/syntactic errors making it difficult to assign meaning to an utterance, phonetic/phonological errors making it difficult to identify individual words.

Two Senior Speech and Language Therapists agreed to check the accuracy of these transcribed utterances. Both therapists worked with adult caseloads and were unfamiliar with current research in developmental psychology and the working hypothesis of this author's research. Each therapist was given a video and audio reference and asked to transcribe the utterance spoken by the subject at this point. Each therapist was given 16 references making a total of 32 references. These 32 references matched the 32 utterances selected by the researcher. The number of utterances given to the two volunteer raters was halved due to constraints on their time. The researcher then compared the raters' transcriptions with her own.

A high degree of similarity was noted between the transcriptions of the raters and this researcher. The transcriptions were judged by this author to be sufficiently similar to accept the transcriptions made by her as accurate records of the subjects' interview responses and valid for the purposes of this second study. However, it is acknowledged by the researcher that there is a lack of rigour in this method of affirming the accuracy of the transcriptions. It was the researcher who selected the utterances to be checked by the raters, it was the researcher who judged the degree of accuracy between the raters' transcriptions and her own, and the utterances selected represented only a small sample of the transcripts as a whole. Ideally the entire interviews for all 32 subjects would have been transcribed by a suitably qualified independent worker and then independently compared for accuracy with the transcripts made by the researcher. This was not done due to the constraints on the raters' time. Both raters were volunteers in the study who worked as full time Speech and Language Therapists with NHS clinical caseloads.

It was however possible to include one other measure to check the accuracy of the researcher's transcriptions. The same two raters who had transcribed the 32 utterance also agreed to act as raters for discourse and expressive language errors and for the ambivalence level and feeling change scores (*The Puppy Story*) and linguistic ambiguity scores (*The Twins Story*). This required the raters to look at the videos of the subjects' interviews to note non-verbal communication such as mimed responses to questions and eye contact. The raters were also given access to the audio tapes to check written transcripts when deciding on expressive language performance errors. Both raters were asked to note any discrepancies they found between the written transcripts of the interviews provided by the researcher and the video and audio taped interviews. No such discrepancies were noted by either of the raters.

Analysis of Subject Interviews

From the results of the first British replication study (Chapter 2) it was inferred that the following cognitive and linguistic skills contributed to children's ability to understand and resolve emotional ambivalence:

- the formulation of increasingly complex hypotheses
- the development of analogical thinking
- an increasingly sophisticated understanding and use of the language of time and space
- the development of complex syntax

The scoring of children's understanding of emotional ambivalence, how feelings change, and their understanding of linguistic ambiguity provided information on how the child's thinking evolves over time and the hypotheses they develop in relation to both tasks of ambiguity: emotional and linguistic. The scoring of children's understanding of ambivalent emotion and what causes feelings to change was carried out according to the original American procedures. Scoring of children's understanding of linguistic ambiguity (pronoun confusion) was carried out based on this same American system.

Discourse (conversation) analysis and the analysis of expressive language performance provided information on the development and use of complex syntax. The analysis of expressive language performance included grammatical, syntactic and phonological errors made by the subjects when presented with cognitively demanding questions. None of these forms of analysis were part of the original American research which looked only at formulating a developmental model for the understanding of emotional ambivalence and what causes emotions to change. An account of the analysis of subjects' discourse and expressive language is given on pages 177 - 179.

The two other skills areas listed above related to analogical thinking including the use of metaphors. As part of the analysis procedures used in this second study the researcher noted any instances of subjects' analogical thinking. This had not formed part of the American research. Metaphors and other imagery (all categorised as *metaphor*) were marked in the transcripts as well as any other forms of verbal reasoning using analogies. This included the child's ability to use their own personal experience from which to infer how a story protagonist might think, feel and act. Also included were examples the child gave of a commonly held body of knowledge (known as folk psychology) from which they inferred how the protagonist would think, feel or act.

The British replication study (Chapter 2) had also noted that subjects sometimes used mime to support their expressive language when replying to interview questions. The researcher therefore noted instances of mime when viewing the subjects' videoed interviews. This was marked in the written transcripts.

As the researcher's exploration and analysis of the video and audio data proceeded it became evident that subjects were using a limited number of responses to both stories when answering interview questions relating to how a protagonist felt, thought or acted, and which could be identified according to type:

- **mental role play**

This is where the subject answers the question in the character of the protagonist in the story. This role play may or may not be accompanied by vocal intonation and facial expression.

- **mime**

This is either where the subject replies to a question through action/gesture only and no words are spoken, or mime is used to support a verbal reply to a question but which is not part of a role play situation where the subject takes on the character of a story protagonist. For example a subject simply mimes a facial

expression when asked: *how does X feel/look?*

- **metaphor**

This is where the subject replies to questions by analogy (metaphor, simile, imagery).

- **personal experience**

This is where the subject draws on personal experience when answering a question about the protagonist.

- **folk psychology**

This is where the subject refers to a body of commonly held knowledge about how and why people feel and act as they do.

These 5 types of responses were named cognitive-linguistic devices by the researcher. *Mime, metaphor, personal experience* and *folk psychology* had been considered from the first replication study as possibly contributing to children's understanding of emotional ambivalence. *Mental role play* was identified in this second study after the data had been collected. Examples of these five devices taken from the data are given in Appendix 6.

Inter-rater Reliability Measures

The same American procedures for assigning emotional ambivalence scores and feeling change scores in *The Puppy Story* were used in this second study. An account of these is given in Chapter 2. However, the inter-rater reliability methods used in this second British study differ from those used in the original American research. This was due to the availability of suitably qualified colleagues who were able to work in a volunteer capacity and had sufficient time

to devote to the research.

In the original 1986 study two research assistants, blind to the hypotheses proposed by the research, were trained to use the manual developed by the American researchers to assign ambivalence level scores. This training consisted of 2 hours of general introduction followed by individual work and joint discussion of 10 transcripts created specifically for training purposes. Following the training, the two raters independently scored the subjects' transcripts related to ambivalence. No identifying information was included on the transcripts so the raters did not know when a given *Puppy Story* transcript and a particular *Kitten Story* transcript belonged to the same subject. The two sets of transcripts were also scored at different times.

A doctoral level psychologist, blind to the hypotheses of the research and without access to any information regarding the subjects, and Dr. Sally Donaldson the first author of the American research, independently scored the transcripts on how feelings change. Feeling change scores were assigned based on the developmental sequence described in the manual written by the two American authors, Sally Donaldson and Michael Westerman. Inter-rater reliability was then calculated for both the ambivalence levels scores and the feeling change scores.

For this second British study two independent raters were each given 16 transcripts randomly selected by the researcher but with an equal number of each age group and sex i.e. 8, 7 – 8 year olds, 4 male and 4 female; 8, 10 – 11 year olds, 4 male and 4 female. The numbers of transcripts were divided to lessen the work load on the volunteer raters. The raters were blind to the research hypotheses. Since raters were required to watch video recording of the interviews it was not possible to preserve the anonymity of subjects' transcripts. Raters were given the same information as that made available to the researcher for the scoring of the ambivalence levels and feeling change scores for *The Puppy Story* i.e. the manuals devised by the American authors. These were

kindly sent to the researcher by Dr. Michael Westerman the second author of the American study. These manuals are reproduced with permission of the authors in Appendices 3 and 4.

The same two raters also assigned linguistic ambiguity scores for *The Twins Story* and analysed all transcripts for discourse and expressive language performance errors and cognitive and linguistic devices used by the subjects in response to interview questions. The same protocols applied as detailed above i.e. raters were blind to research hypotheses and each rater had 16 transcripts to analyse which were randomly allocated by the researcher but with equal numbers of subjects according to age and sex. Raters were given examples of subjects' responses specially created for training purposes. These examples were for:

- emotional ambivalence level scores
- feeling change scores
- linguistic ambiguity level scores
- discourse errors
- expressive language performance errors
- cognitive and linguistic devices

For the purposes of all inter-rater reliability measures the researcher was classed as rater A and the scores and analyses of the other two raters amalgamated and classed as rater B. Inter-rater reliability scores are given on page 189.

Trial of Experimental Materials & Procedures

The second study required the introduction and use of new materials: *The Twins Story* and the structured interview used to elicit children's level of understanding of linguistic ambiguity. It also required different procedures to those of the original American research including video recording and additional analysis protocols. A number of issues relating to the new materials had been identified. These related to differences between the two stories used in the study (*The Twins Story* and *The Puppy Story*) and the two structured interviews. Specifically:

- difference in average sentence length in part one of the stories
- a more pragmatically demanding question in the interview for part two of *The Twins Story*

It was not anticipated that these would cause significant difficulties for typically developing children, or interfere with the aim of this research. However, in order to test this it was decided to conduct a trial with a limited number of subjects. Eight of the thirty – two subjects were randomly selected: 2 boys and 2 girls aged between 7 – 8 years; 2 boys and 2 girls aged between 10 – 11 years. These children were introduced to the procedures and the experimental tasks. Both *The Twins Story* and *The Puppy Story* were presented to the subjects.

No difficulties were encountered by these subjects with the materials. No appreciable differences were found between the subjects' interactions with the materials relating to the length or linguistic complexities of the stories. Subjects fluently re-told all parts of each story including part one of *The Twins Story* with its longer average sentence length. All of these subjects identified the linguistic ambiguity and were able to cope with the question:

How does the character in the story feel when s/he opens the present?

On being asked this question one of the older boys wanted to hear the second part of *The Twins Story* again as he said he had “forgotten” which twin went downstairs. This repetition was allowed by the American protocols and when the subject heard the story for a second time he was able to say confidently that the story didn’t specify which twin went downstairs. Subjects did not appear to be inhibited by the video camera and all commented favourably on the experience of taking part in the research. All subjects scored within the average range for their age on the formal tests of their language skills using the *Test of Word Knowledge (TOWK)*.

Given the favourable response of these 8 subjects to the research materials it was decided to continue the study with no alterations. The remaining 24 subjects were then seen. The procedures and experimental tasks were identical for both the trial subjects and the remaining subjects. These procedures are now given in the Method section (part 2) of this Chapter.

METHOD

Part 2: Conduct of the study

Ethical considerations

Similar ethical considerations were applied to this second study as detailed in the first stage of the research (see Chapter 2, page 20). However, there were additional considerations specific to this language normal study relating to the slightly different protocols which included the use of video as well as audio recording of subjects and formal language assessment.

Further information on the Ethics of this study is detailed in Appendix 7.

Recruitment

A total of thirty two children were recruited for this second study: sixteen 7 – 8 year olds and sixteen 10 – 11 year olds. The number of subjects was decided on pragmatic grounds as being the largest number a single researcher could effectively work with given the additional amount of transcript and data reduction required by this British study. The original American study by Donaldson and Westerman (1986) had twenty subjects per age group although no rationale was given for this figure. In addition, both Doctoral students and Post Doctoral staff helped with the gathering and analysis of the American data which did not include the linguistic and pragmatic analysis of audio and video transcripts.

Recruitment of subjects was through the same two local Exeter mainstream schools that took part in the first study. Both Head Teachers were happy with the initial research conducted at their schools and gave their permission for the larger study with the adapted protocols. Contact with teaching staff was conducted through the same two Special Educational Needs Co-ordinators (SENCOs) involved in the initial project.

Children were selected through discussion with the Special Educational Needs Co-ordinators and in collaboration with the Head Teachers and class teachers. Following the completion of the first study as detailed in Chapter 2, the Special Needs Co-ordinators and teachers were asked by the researcher about their initial selection methods for drawing up a list of possible subjects. All stated that they selected those children who met the research criteria, but who they also felt would make “good” subjects for the researcher. “Good” subjects were defined as those the selectors felt were articulate, enjoyed communicating with adults, and would enjoy the attention of participating in the study. These additional “hidden” selection criteria could have resulted in a weighting of subjects toward certain personality traits (such as more outgoing and self confident extroverts) and/or higher average language and cognitive abilities.

Differences in the performance of subjects with distinct personality features when confronted with tasks of emotional processing have been noted in a number of research trials (see J. E. Bates: *Temperament as an Emotion Construct: Theoretical and Practical Issues*, 2000 for an overview, also C. Saarni: *The Social Context of Emotional Development*, 2000 for a specifically developmental perspective). By selecting the thirty two subjects required for this second study from only these two relatively small schools, and not widening the study to include other local schools, teachers were forced into nominating children with a range of personality traits and with low, as well as high, average abilities. This prevented selection of subjects by temperament, and ensured subjects were included with a range of average language and cognitive abilities, including low average achievers.

The recruitment of the twelve children for the first study had involved no direct contact between the researcher and the class teachers who put forward children's names to the SENCo's for selection. (See Chapter 2, pages 23 – 24 for the rationale for this protocol). This recruitment procedure had worked well and the subjects selected had all been appropriate for this first study. This procedure was therefore used again for the second study. However, a number of disadvantages with this recruitment method were subsequently discovered.

- The mother of one of the older (10 – 11 years of age) subjects telephoned the researcher on receipt of the initial contact letter. She explained that although she thought the research was important she did not wish her daughter to take part as she had been very close to a grandfather who had recently died (within the past six months). The daughter had been very upset following this death and the mother was concerned that working with emotional material might re-awaken the daughter's grief. Clearly one of the selection criteria given to the SENCo. (no emotional trauma within 12 months) had not been sufficient to prevent this subject's

name being put forward and accepted. The teacher had not been aware of any significant or lasting emotional impact as a result of the death of the grandparent and had the mother not telephoned the researcher this child might have been seen inappropriately.

- The data of one of the older (10 – 11 years of age) girls was later discounted as it was found that her father was dying of cancer at the time of the research. This only came to light when the subject herself explained to the researcher that their last session would have to be re-arranged as she was going on a last family holiday with her father. The researcher discussed this with the girl's class teacher who said that while she had been aware of the selection criteria, the family had been given a great deal of counselling and support throughout the father's illness and the class teacher felt the daughter was coping well with the situation and giving no indication of emotional trauma. The teacher's own understanding of the term "emotional trauma" was obvious physical signs of distress such as crying and poor concentration, neither of which the girl was displaying in class. The research selection criteria of "no recent or persisting emotional trauma" had thus not been sufficiently detailed to be understood by the class teacher.
- One of the older (10 – 11 years of age) boys was eliminated from the study after completing the protocols because psychological difficulties appeared to interfere with his ability to perform the tasks. It was later found that this boy was witnessing domestic violence directed at his mother and which had started within the previous 12 months. Discussion between the class teacher and the boy's mother later revealed that the mother had agreed to her son taking part in the research in the hope that the family's situation would then be discovered. Until this time, the teacher had been unaware of what the boy was experiencing as the mother had not felt able to talk to anyone outside of the family.

The following additional protocols would help to overcome these disadvantages.

- The researcher would talk directly with class teachers and explain more fully what is meant by the term “emotional trauma”. This would include family bereavement, hospitalisation or illness of the subject or close family member and divorce of parents all within the twelve months prior to the research taking place. Experiences such as the child moving into the school from outside the area would also need to be discussed and the teachers would be asked to indicate any reasons they felt the child might be experiencing emotional distress. This would include unresolved issues from events outside the twelve month period prior to the research commencing. (The twelve month period was the criteria used by the American researchers Donaldson and Westerman in their original 1986 study). If the school SENCo’s continued to prefer to speak to the class teachers themselves then a brief information sheet explaining emotional trauma and a questionnaire which would direct the teacher’s thinking would be devised and given to the teaching staff prior to their putting forward children’s names for consideration. The questionnaire would be filled in by the teacher for each potential subject. Questions would relate to the child’s known experiences since starting at the school and which could have an emotional/psychological impact, specific experiences within the past twelve months and the child’s current emotional and psychological presentation in class. In order to preserve confidentiality the child’s name would not appear on the questionnaire until they had been accepted as a potential subject.
- A questionnaire, similar to that devised for the class teachers, would be sent to parents of subjects along with the information sheet and consent form. This would bring to light any experiences or situations likely to

impact on the child's emotional/psychological well being and which might be unknown to the class teacher.

- It is difficult to guard against a situation where emotional trauma is being experienced by a subject unknown to the class teacher and which is undeclared by the parent. The parental questionnaire may reveal such difficulties but not if the parent deliberately decides to conceal the situation, or feels unable to address the issues explicitly when filling out the questionnaire. In this second study one of the older subject's presentation and data was sufficiently different from his peers to make the researcher query the boy's validity as a research subject. This led directly to the mother's revelation of domestic violence to the class teacher. The interviewer should be made aware that any concerns s/he has regarding the presentation of the subject should be discussed with school staff. In addition, the parental questionnaire should have a declaration that although any information disclosed will be treated in strictest confidence, any information indicative of likely harm to the child will be reported. This is line with new child protection guidelines drawn up by the researcher's current employing NHS Trust. The implications of possible delayed and atypical responses to the interview questions by typically developing children are explored in Chapter 5.

Following the limitations discovered in the recruitment method, the researcher spoke to all the class teachers who had put forward names of subjects and discussed in more detail the nature of the selection criteria, including emotional trauma. No concerns were raised regarding any other subject who took part in this study.

As part of the recruitment protocol class teachers were sent copies of the initial letter sent to parents so they were prepared if approached by parents of children in their class regarding the study. Six mothers of younger subjects (7 – 8 years

of age) asked their child's class teacher for advice and re-assurance on their child taking part in the study. Two of these mothers then contacted the researcher for further information. None of the parents of the older subjects (10 – 11 years of age) spoke to the class teachers; however one mother of an older boy spoke briefly to the SENCo. and another telephoned the researcher to ask for more information. These parents then gave permission for their children to take part in the research.

The recruitment protocols for the 4 readers who audio tape recorded *The Puppy Story* and *The Twins Story* were similar to those used for the research subjects. The readers were selected by school staff who gave their names in confidence to the researcher. The researcher then wrote to their parents requesting permission for their child to take part in the study. The information sheet outlining the purpose and nature of the research was also sent to the parents, but it was stressed in the covering letter that the child had been selected as a reader and would not participate in any other aspect of the study. Parents were asked to contact the researcher if they wished any further information about the research or details of what their child would be asked to do.

The parents were told the length of the stories, and a general idea of the story content. However the stories themselves were not sent as the researcher did not want any possibility of the research subjects gaining detailed knowledge of the stories prior to their interviews in school. The parents of the readers were told their child had been selected because of their good reading skills and because they were in the same age range as the children taking part in the research. Both the parents and children gave their written permission for the audio recording of the two stories. None of the parents contacted school staff or the researcher for further information. All 4 sets of parents approached gave permission for their child to take part in the study.

Subjects

Thirty-two children participated in this study and were recruited through their school: sixteen 7 – 8 year olds; sixteen 10 – 11 year olds, with an equal number of boys and girls in each group. The following mean ages were obtained: 7 – 8 year olds mean (females): 8 years 1 month (SD 4.4), (males) 8 years 1 month (SD 6.3); 10 – 11 year olds mean (females): 11 years 2 months (SD 4.75), (males) 11 years 3 months (SD 2.9). Younger (4 – 5yrs) subjects were not used as previous research had already established that this age group was unable to detect ambivalent emotions. The 4 readers, 2 girls and 2 boys, who audio recorded the research stories were in the same age range as the subjects, i.e. one girl aged 7 years, one boy aged 8 years; one girl aged 10 years and one boy aged 10 years. All the children attended two local (Exeter) mainstream primary schools.

Children were selected through discussion with the Special Educational Needs Co-ordinators and in collaboration with the Class Teachers. Liaison with schools and all interviews and experimental procedures were carried out by this author who had extensive professional contact with the schools involved. However, none of the children selected had previously been known to, or had contact with, the author.

The criteria used for the selection of subjects were that they had no identified behavioural difficulties, no history of recent trauma (within the past 12 months, such as parental divorce) or persisting emotional problems, no current or past identification of a speech and/or language impairment, a minimum low average range of verbal and non verbal skills, and were from mixed socio-economic backgrounds. All the children selected, including the 4 readers, had British English as their only language experience. Socio-economic status was assessed according to the employment of the main wage earner (professional/non professional) and housing conditions (private/council owned or Housing

Association). Each potential subject was classified as either class 1 or class 2. To qualify as class 1 the main wage earner was required to be in professional employment and the family living in private accommodation. To qualify as class 2 the main wage earner was in non professional employment and the family living in council owned or Housing Association property.

It was subsequently discovered that one of the older female subjects (10 – 11 years of age) was the cousin of a male language disordered client previously known to the researcher. However, as this subject obtained language scores within the good average range for her age on formal testing her inclusion in the study was permitted. The researcher was unaware of the connection while interviewing and assessing this subject.

The author was allowed access to the results of standardised tests and assessments for the purposes of verifying the children's general cognitive abilities. These included CoPS (*Cognitive Profiling System*) and SATs scores (*Standard Assessment Tasks*), as well as reading comprehension scores. Reading comprehension was assessed by the *Group Reading Test 11, 6 – 14* (The Macmillan Test Unit with Neil Hagues and Juliet Burley, NFER-Nelson, this edition published in 2000). Please see Appendix 2 for further information about the *Cognitive Profiling System*. All subjects had assessment scores which were within the average range at the time of testing. Reading comprehension scores had all been carried out within the preceding 12 months. No subject had at any time received scores of less than average in any formal or informal school assessment (confirmed by school staff).

Formal assessment of the subjects' receptive and expressive language skills was made by this author to confirm average skills in these areas. Assessment was carried out using the *Test of Word Knowledge (TOWK)* by E. H. Wiig and W. Secord (1991). The following subtests were administered: *Synonyms*, *Figurative Usage*, *Multiple Contexts* (multiple meaning words) and *Conjunctions and*

Transition Words. These subtests were selected as reflecting the linguistic and meta-linguistic skills required to successfully complete the experimental task (the ability to understand, use, and manipulate analogy and complex syntax structure) as identified in the first study. Average standard scores range from 7 – 13. Subjects obtained standard scores which ranged from the lowest score obtainable within the average range (7) to scores in the above average range (14 or higher).

Two subjects from the older group were eliminated from the study because psychological difficulties appeared to interfere with their ability to do the tasks. It was discovered that the father of one of the girls was in the terminal stages of cancer, and one of the boys was witnessing domestic violence directed at his mother. These subjects were both replaced by other suitable candidates from the same school.

A mother of one of the older subjects (10 – 11 years of age) telephoned the researcher and refused permission for her daughter to take part in the study due to a family bereavement. A father of one of the older subjects telephoned the researcher and refused his permission as he felt time taken for the study would interfere with his son's school work. One set of parents of an older subject did not reply to the initial contact letter. All these potential subjects were replaced by other suitable children from the same school. All the parents of the younger subjects who were approached gave their permission for their children to take part in the study.

Procedures

Procedures were based on those established by Donaldson and Westerman in their 1986 American study and carried out by this researcher in the first study. Each child was seen in two separate sessions with one story presented in each session. Story order was counterbalanced. Both stories were audio tape recorded by children who were in the same age range as the subjects, but who were not otherwise engaged in the study. Male subjects aged 7 – 8 years of age listened to *The Puppy Story* and *The Twins Story* read by the 8 year boy. Female subjects aged 7 – 8 years listened to the two stories read by the 7 year old girl. The older subjects also listened to the stories read by a peer of the same sex. The sex of the subject and reader was matched to help the subjects empathise as closely as possible with the story protagonist who was said to be of the same age and sex as themselves (as specified in the American protocols).

For this second study each of the experimental sessions was video as well as audio tape recorded. Interviews took place in a quiet room at the child's school with only the child and interviewer present. Interview sessions took between 30 – 45 minutes to complete.

Once the two experimental sessions were completed the subjects' receptive and expressive language abilities were assessed. This required between one and two additional sessions depending on the age and temperament of the child. Assessment was carried out using the *Test of Word Knowledge (TOWK)* by E. H. Wiig and W. Secord (1991). Language assessment was carried out after the experimental task had been completed in order to prevent the possibility of priming subjects in the use of analogical reasoning such as using metaphors and figurative language.

Experimental task

Each child was told that s/he was going to hear an audio tape recorded story about a child/children of the same age and sex as the subject. *The Puppy Story* describes a situation in which the story character can be construed as having mixed feelings. A structured interview, designed by the American authors, was used to elicit subjects' understanding of the story character's ambivalent feelings and their own theories about how feelings change. *The Puppy Story* requires subjects to co-ordinate anger and love. Subjects were asked about the co-ordination of angry and loving feelings and about what makes angry feelings come and go. The interview protocol dealt separately with the issues of ambivalence and feeling change. Each issue had its own set of questions, which were examined and scored independently.

The Twins Story described a situation where it was uncertain as to which of two characters (twins) was being depicted as opening a Christmas present. A structured interview, written by this author was then used to elicit subjects' understanding of this ambiguity. *The Twins Story* required subjects to identify the ambiguity and also to say what had caused it (pronoun confusion). Subjects were also asked for suggestions as to how the ambiguity could be resolved (avoided) in the story, for example by giving the name of the twin who opened the present. Thus, as with *The Puppy Story*, both meta-linguistic and meta-cognitive skills were required to recognise and resolve the ambiguity presented. However, only *The Puppy Story* required these skills to be used in the context of understanding human emotion. This is further explored below.

Stories were presented in two parts. Following the American protocols the subjects were asked to repeat both parts of the stories in their own words immediately after hearing them. This was to check auditory verbal memory and narrative sequencing skills. If required, and following the American protocols, "Wh" questions (i.e. *who, what, where, when, why*) could be used to check

comprehension.

In the first part of *The Puppy Story* the protagonist is depicted as having single valence feelings: the character loves the dog which has just found his/her favourite lost toy. At this point the child is simply asked to identify how the story character feels.

In the first part of *The Twins Story*, the two characters are introduced as well as their family's financial difficulty in buying two separate Christmas presents. The preferences of the twins for Christmas presents are also stated: Caroline/Colin wants computer games and Rosie/Roland wants roller blades. (Alliteration is used to link the names to the items desired and so strengthen the sense of the characters' identity, and also to aid the subjects' auditory verbal memory). At this point the interview protocol closely follows that of the American study and the child was simply asked to identify how the twins are feeling.

The second part of each story introduces the ambiguity. For *The Puppy Story* this is the ambivalence of contradictory emotion. The dog destroys a plane/painting the character has worked hard to create. Again, the child was asked to identify the character's feelings. If the subject did not immediately mention two conflicting feelings, probe questions were asked to ascertain if the protagonist could be feeling anything else.

In *The Twins Story* one of the twins is described as creeping downstairs at night to open the Christmas present. The present is named (roller blades) but not the twin. The child was asked how the character in the story feels. If the subject did not immediately mention that the identity of the character is unknown (and therefore that the feelings of the character are also unknowable), probe questions were asked. These questions attempt to elicit from the subject how they have identified the feelings of the protagonist, or why they have not done so.

At this point, for children whose responses to *The Puppy Story* included mention of the two contradictory emotions, or for *The Twins Story* where the subject recognised that it was not possible to know which twin opened the Christmas present, a series of questions was asked to determine the nature of the child's understanding. If, in response to the first few questions that followed the second part of each story, the child failed to spontaneously mention the possibility of ambivalent feeling in *The Puppy Story*, or ambiguous identity in *The Twins Story*, an alternative series of questions was asked to determine whether the child actually had some understanding that the initial "forgotten" emotion could be present, or that the name of the twin opening present had not actually been mentioned.

A separate section of the interview protocols for *The Puppy Story* focused on subjects' own theories about how feelings change and the degree of control children have over their emotions. The children were asked: *What makes angry feeling go away? Is there anything children can do to make angry feelings go away? If angry feelings go away, will they come back?* and, if the response to this question was affirmative, *What will make them come back?*

This section of the interview protocol for *The Puppy Story* was not required as part of the experimental task comparing children's cognitive and linguistic skills in identifying and resolving linguistic ambiguity and emotional ambivalence. However, it was decided to include this section of the interview protocol to provide additional data on typically developing children's growing emotional awareness. This could be used in the third stage of the research comparing case studies of language disordered subjects.

The *Puppy Story* questions relating to children's understanding of what makes feelings come and go form Part 3 of the interview procedure. There is no corresponding Part 3 for *The Twins Story* which deals only with children's understanding of linguistic ambiguity.

Scoring Criteria

The Puppy Story

The American manual developed by Donaldson and Westerman to score subjects' responses to *The Puppy Story*, and which had been used in the first study, was also used to score subject's responses in this second study. The same scoring criteria were used. Subjects' responses to the structured interview were scored both for their understanding of ambivalent emotion and their ability to understand how feelings change (feeling change score). Copies of the complete scoring manuals both for the understanding of ambivalent emotion and the understanding of what makes feelings change, together with examples of children's responses at the different levels are given in Appendix 3 and Appendix 4.

The emotional ambivalence score was used in a direct comparison with the scores children obtained for understanding linguistic ambiguity in *The Twins Story*. The feeling change score had no correlate in *The Twins Story* but was used to provide confirmatory evidence that the children were following the same developmental path as the children in the American study, and to provide additional information regarding the children's level of emotional understanding.

The following is a brief outline of the scoring levels for the emotional ambivalence and feeling change sequences and copied with the permission of the American authors:

Understanding ambivalence

Level 0 – Children correctly identify single feelings, but do not realise that multiple, including contradictory, feelings exist.

Level 1 – Children recognise that multiple, even contradictory feelings exist although typically only talk about the experience of conflicting feelings when probed: they realise that they feel differently at different times depending on the situation.

Level 2 – Children begin to realise that contradictory feelings can be experienced towards the same situation or person. They are able to consider the possibility that feelings might interact and influence each other, but they don't know how to reconcile or understand ambivalent feelings.

Level 3 – Children understand ambivalence and recognise that two contradictory feelings can coexist at the same time toward the same person and situation. Feelings are now understood in terms of a wider context within which they impinge upon and influence one another.

Theories of how sad and angry feeling change

Level 0 – Unscorable responses because of limited or unclear data. For example the child repeatedly answers *I don't know*.

Level 1 – Children believe that sad and angry feelings come and go in response to external events and circumstances.

Level 2 – Although negative feelings still come and go largely in response to external events and circumstances, there is a beginning awareness that thoughts and memories also affect the ebb and flow of feeling states.

Level 3 – Negative feelings come and go largely in response to memories, thoughts and attitudes.

The Twins Story

Children's responses to the story containing linguistic ambiguity were elicited via a structured interview written by this author and scored according to a four level system of categorisation. This is based on the system designed by Donaldson and Westerman for the understanding of emotional ambivalence and causal theories of emotions (see above). For examples of children's responses at each of the levels see pages 142 - 147.

Understanding linguistic ambiguity (pronoun confusion)

Level 0 – Not able to score responses because of limited or unclear data.

Level 1 – Children unable to demonstrate any recognition of linguistic ambiguity, even with probing.

Level 2 – Children able to demonstrate explicit recognition of linguistic ambiguity with probing, but insist on naming the twin who opens the present. Children rationalise their decision by explaining it in terms of their existing knowledge of story or linguistic convention i.e. that no story or sentence is deliberately written to be ambiguous and therefore it is the listener's task to "solve" the ambiguity.

Level 3 - Children spontaneously demonstrate explicit recognition of linguistic ambiguity. They are aware that it is not possible to answer the question asked in the interview: *How does the character in the story feel when s/he opens the present?*

Children understand that for an unknown reason the story is confused due to the ambiguity of the pronoun. At this level children are able to acknowledge the existence of this ambiguity without trying to "solve" it.

Discourse Analysis

For both stories, subjects' responses to the structured interviews were transcribed from audio and video tape including all pause data, mazes etc. Damico's (1985) classification of children's pragmatic difficulties was used as a framework for this analysis. This was devised for the identification of pragmatic errors in discourse and includes analysis of both verbal and non-verbal behaviours. The following areas were selected as the most appropriate for use in this interview context.

Quantity category

- Failure to provide significant/sufficient information to listener.
- Use of non-specific vocabulary (e.g. use of vague words such as *stuff*), or deitics (e.g. *this*, *that*, or pronouns) where no antecedent or referent is available in the verbal or nonverbal context.
- Informational redundancy (speaker continues to stress a point or return to a topic that has been covered).
- Need for repetition (child requires frequent repetition of information in order to participate in the interview).

Relation Category

- Poor topic maintenance (speaker makes rapid and inappropriate changes in topic without providing transitional cues to the listener).
- Inappropriate responses (includes illogical, incoherent utterances, or associative type responses).
- Failure to ask relevant questions (the individual does not seek clarification of information that is unclear).

Manner Category

- Linguistic non-fluency (repetitions, unusual pauses, and hesitations).
- Revision (false starts and interruptions; speaker comes to a dead-end in a maze and must begin again).
- Delays before responding (inordinately long pauses at turn-switching points).
- Gaze inefficiency (identification of occasions when eye contact is lost related to expressive language difficulties).
- Inappropriate intonational contour (mismatch between pitch levels, vocal intensity, inflectional contours and the overt meaning of the utterance).

Analysis was also carried out on subjects' expressive language performance according to the following parameters:

- Lexical errors
(Where whole words are retrieved incorrectly, name confusion, pronoun confusion).
- Syntactic/Morphological errors
(These errors refer to deviations from age appropriate acceptable spoken sentence structures and grammatical structures).
- Phonological errors
(These are speech sound errors. Error types include vowel distortions, voicing, final consonant deletion, stopping, cluster reduction).
- Semantic errors
(These errors relate to a confusion of word meaning by the child).

Appendix 8 gives examples of children's discourse and expressive language

performance errors.

Transcription conventions used to record discourse errors and expressive language performance errors:

All errors were marked in the transcription by a colour coding system which facilitated counting.

Quantity category errors underlined in blue

Relation category errors underlined in green

Manner category errors underlined in red

Lexical errors underlined in dark blue

Syntactic errors underlined in purple

Phonological errors underlined in light orange

Semantic errors underlined in dark orange

Unintelligible utterances were marked with X. The numbers of syllables or words were included in the transcribed utterance e.g. X XX XXX was used to denote three words of one, two and three syllables. Unintelligible utterances were classed as an inappropriate utterance and underlined in green (Relation category).

Pauses which occurred within words were underlined in red to indicate a Manner category error (unusual pause).

The symbol (└) was used to denote the point in an utterance when a speaker came to a dead end and had to begin again (maze). This symbol was underlined in red to indicate a Manner category error.

Delays before responding of longer than 3 seconds were considered significant.

This is based on the procedures developed by Naremore, Densmore and Harman (1995) for analysing language impaired children's conversational skills. These delays were marked as in the transcript with each dot representing a second of time. These delays were then underlined in red to indicate a Manner category error.

Gaze inefficiency was identified using: ⌄ and ⌅. The symbol ⌄ was placed at the point in the transcript where the subject removed eye contact. The symbol ⌅ was inserted at the point where eye contact was returned. This was marked in red to indicate a Manner category error.

There were no recorded examples of inappropriate intonational contour.

When identifying expressive language performance errors it was necessary to make a distinction between those errors which were due to cognitive demands on language processing and formulation and colloquial English acceptable in Devon and phonetic differences which are part of a South West accent. The two independent raters analysing the transcripts were asked to note any linguistic or phonetic errors they felt might be attributable to a local dialect or accent.

The researcher approached two colleagues who had been born and brought up in Devon. One was a Specialist Paediatric Speech and Language Therapist who had been born in South Devon and now lived in Exeter and the other was a Speech and Language Therapy Assistant who had been born locally in Exeter from parents also born and raised in the Exeter area. The Assistant also had children of the same age range as the subjects used in this second study.

Both these colleagues agreed to look at any performance errors noted by the raters, or the researcher, where it was unclear as to whether or not they could be attributable to local dialect or accent. However, in the event neither the two

raters nor the researcher noted any such errors. It is suggested that in future research the entire transcripts and audio recordings could be provided for local speakers to read/listen to in order to judge for local dialect or accent.

Cognitive-Linguistic Devices

One further level of analysis was performed on the data. Responses from subjects were classified in terms of the devices or “tools” they used in their replies to questions. The following five categories were identified (see pages 154 – 155 for further details of the categories):

- ***mental role play***
- ***mime***
- ***metaphor***
- ***personal experience***
- ***folk psychology***

Please see Appendix 6 for examples of subjects’ responses under each of these category headings.

A colour coding system was used to identify cognitive-linguistic devices in the transcriptions. Each device given a colour. The utterance identified as belonging to one of the above 5 devices was underlined in the appropriate colour.

Mime was marked in the transcript by: { }. These symbols were inserted at the point where the mime occurred. If the subject talked over the mime then this

spoken utterance was included between the two brackets.

Utterances identified as *mental role play* were transcribed in italics and then underlined in the appropriate colour for ease of counting.

Two independent raters also analysed the audio and video data and marked on the transcripts where subjects used any of the above devices. Raters were also asked to note any responses which they felt did not fit any of the 5 types listed above. For training purposes the researcher gave examples of the 5 types of devices and transcribing conventions to the two independent raters. These examples were specifically created for this purpose.

Inter-rater scores for the identification of cognitive-linguistic devices are given on pages 189 - 190. Neither of the two raters noted any response which they felt could not be allocated to one of the 5 types defined by the researcher.

Data Reduction

Verbatim transcripts were prepared by the researcher from audio tapes of the interviews. These were checked against the video recordings. As well as the transcript conventions detailed above the symbol: { was used to indicate simultaneous speech (as used by J. S. Sachs, E. A. Schegloff, and G. A. Jefferson, 1974, and reported in A. Ellis and G. Beattie: *The Psychology of Language & Communication*, 1986). The video recordings were also analysed for non verbal communication such as gaze inefficiency when eye contact is lost related to expressive language difficulties (Manner category error) and instances of mime.

There were five transcripts for each subject:

Part 1 of *The Puppy Story* interview. This questioned children about the first part of the story.

Part 2 of *The Puppy Story* interview (which questioned children about the ambivalent feelings in the second part of the story)

Part 3 of *The Puppy Story* interview (which questioned children about emotional causality i.e. how feelings change).

Part 1 of *The Twins Story*. This questioned children about the first part of the story.

Part 2 of *The Twins Story* (which questioned children about the linguistic ambiguity in the second part of the story).

As in the first study the researcher assigned an ambivalence level score (0-3) to the transcripts relating to ambivalence. In assigning a level several features of the child's responses were considered.

- How much probing was required before the subject identified the presence of two feeling states.
- How the subject dealt with the questions about time (feelings experienced simultaneously vs. sequentially) and space (feelings as mixed up or separate) to determine the extent of the child's knowledge that it is possible to experience two feelings at the same time towards the same target.
- The degree to which subjects recognised that conflicting feelings can interact and influence one another.
- How the subject understood the relationship between events and feelings.

As the final determinant, assessments of the entire transcripts were matched to one of the profiles used to define the ambivalence levels as provided by Dr. Westerman, the second author of the American study. These profiles are reproduced in Appendix 3. When difficulty was encountered in deciding between levels, scores were made conservatively in favour of the lower level. This was to counterbalance the design of the protocol which was weighted towards eliciting subjects' most advanced thinking through the use of probe questions.

The same procedures were used to score the transcripts on how feelings change, assigning feeling change scores based on the developmental sequence (0-3) described in the scoring manual (Appendix 4).

Subjects' ability to identify and resolve the linguistic ambiguity in *The Twins Story* was also assigned a linguistic ambiguity level score (0-3). This was based on the framework devised by this author and which was developed from profiles identified within the data and by analogy with the Donaldson and Westerman levels.

When assigning a level several features of the child's responses were considered. This follows the protocols for assigning levels for emotional ambivalence.

- How much probing was required before the subject identified the presence of the linguistic ambiguity.
- How the subject dealt with the questions about the identity of the twin who opened the present and how the story could have been made less confusing so as to determine the extent of the child's knowledge of the linguistic ambiguity in the story.

- The degree to which subjects' recognised that the pronoun confusion prevented any possibility of resolving the story and violated the generally accepted rule that stories make sense.
- How the subject understood the relationship between the unresolved narrative (events) and the linguistic ambiguity.

When difficulty was encountered in deciding between levels, scores were made conservatively in favour of the lower level. This was based on the design of the protocol which matched that established by Donaldson and Westerman and which was weighted towards eliciting subjects' most advanced thinking by the use of the probe questions.

Each subject therefore had the following scores:

- 1 score (level) for understanding emotional ambiguity (*The Puppy Story* part 2)
- 1 score (level) for causal theories of emotion (*The Puppy Story* part 3)
- 1 score (level) for understanding linguistic ambiguity (*The Twins Story* part 2)

The total number of discourse errors according to category and per story interview part (i.e. Part 1 *The Puppy Story*, Part 2 *The Puppy Story*, Part 3 *The Puppy Story*, Part 1 *The Twins Story* and Part 2 *The Twins Story*):

- Quantity
- Relation
- Manner

The total number of linguistic/phonological performance errors for each of the following classes per story interview part (as above):

- Lexical
- Syntactic
- Phonological
- Semantic

The total number of cognitive-linguistic devices used per story interview part (as above) and identified under the following headings:

- *Mental role play*
- *Mime*
- *Metaphor*
- *Personal Experience*
- *Folk Psychology*

All the data collected was scored independently by two experienced Speech and Language Therapists working with a non paediatric client group and in a different Health Authority district from that of the researcher.

Data Analysis

A variety of methods were used to analyse the data obtained from the research subjects:

- nonparametric statistical tests
- bar charts and pie charts
- box plots

Statistical tests were used to show significant relationships within the data.

It must be noted that statistical analysis carried out on data relating to the cognitive-linguistic devices should be treated with caution. This is because no hypotheses had been formulated before the statistical analysis was carried out. The device *mental role play* was identified only *after* the data had been gathered. The results presented in this chapter should therefore be seen as part of the exploratory nature of this study and can be used to establish hypotheses on which further research can be based. This also applies to the gender differences explored in the number of children's performance errors when responding to the interview questions for the two stories.

Due to the large number of tests carried out on the language normal data generated by this second study the analysis of the different types of metaphors used (such as spatial metaphors) is not presented at this stage. This analysis is explored in detail in the third study comparing typically developing children's use of metaphor with that of the language impaired children.

Bar charts and pie charts were used to describe the data obtained. They are a clear way of visually representing numerical (size) differences and percentage differences within the data.

Box plots were used to illustrate movement and connections within the data which may not have been obvious when using other forms of nonparametric statistical analysis.

The results are presented in the order in which they were carried out by the researcher. Statistical support was provided by the Research and Development Support Unit (NHS South West).

Inter-rater Reliability Scores

Two Senior Speech and Language Therapists provided inter-rater reliability scores. Both therapists worked with adult caseloads and were unfamiliar with current research in developmental psychology and the working hypothesis of this author's research. The volunteer raters each scored half of the transcripts. The researcher was classed as Rater A and the scores from the independent raters amalgamated and classed as Rater B. The following shows the differences obtained in scores between the raters:

Emotional ambivalence scores:

7 – 8 yrs group

3 out of 16 scores differed on initial scoring

10 – 11 yrs group

2 out of 16 scores differed on initial scoring

Emotional causality scores:

7 – 8 yrs group

2 out of 16 scores differed on initial scoring

10 – 11 yrs group

2 out of 16 scores differed on initial scoring

Linguistic ambiguity scores:

7 – 8 yrs group

3 out of 16 scores differed on initial scoring

10 – 11 yrs group

2 out of 16 scores differed on initial scoring

Cognitive-Linguistic Devices scores:

7 – 8 yrs group

2 out of 205 scores differed on initial scoring

10 – 11yrs group

100% agreement

Performance errors (linguistic breakdown) scores:

All discussed and agreed as queries arose.

An unweighted Kappa Test was used to check inter-rater reliability for the Emotional ambivalence scores, Emotional causality scores and Linguistic ambiguity scores. Good agreement ($>0.6 \leq 0.8$) between raters was obtained.

7 – 8 years

Emotional ambivalence scores:

Kappa = 0.710843 (se = 0.176687)

Emotional causality scores (Feeling Change scores):

Kappa = 0.75 (se = 0.242061)

Linguistic ambiguity scores:

Kappa = 0.68 (se = 0.191862)

10 – 11 years

Emotional ambivalence scores:

Kappa = 0.619048 (se = 0.166241)

Emotional causality scores (Feeling Change scores):

Kappa = 0.753846 (se = 0.211538)

Linguistic ambiguity scores:

Kappa = 0.698113 (se = 0.1704)

RESULTS

Contents:

1. Sections 1 – 7 pages 195 - 202

Replication of results and comparison with *The Twins Story*

Analysis was carried out to investigate:

- the degree to which this second study replicated the findings of the American research (Donaldson and Westerman, 1986) and the first British study (Chapter 2) on children's understanding of emotional ambivalence and emotional causality (children's theories about what causes emotions to change). These findings relate to *The Puppy Story* only.
- if children's chronological age was related to their understanding of linguistic ambiguity. These findings relate to *The Twins Story* only.
- if children's ability to understand linguistic ambiguity was related to their understanding of emotional ambivalence and/or emotional causality.

2. Sections 8 - 13 pages 203 – 253

Children's use of cognitive-linguistic devices

Analysis was carried out to investigate:

- the relationship between children's use of cognitive-linguistic devices (*mental role play, mime, metaphor, personal experience and folk psychology*) and their understanding of emotional ambivalence and emotional causality (in *The Puppy Story*).
- the relationship between children's use of cognitive-linguistic devices (*mental role play, mime, metaphor, personal experience and folk psychology*) and their understanding of linguistic ambiguity (in *The Twins Story*).
- developmental differences in the number and type of cognitive-linguistic devices used by children when responding to the structured interviews for *The Puppy Story* and *The Twins Story*.
- the relationship between gender and the number and type of cognitive-linguistic devices used by children when responding to the structured interviews for *The Puppy Story* and *The Twins Story*.

3. Sections 14 - 16 pages 254 – 278

Children's performance errors

Analysis was carried out to investigate:

- developmental differences in the number and type of discourse errors which occurred in children's responses to the structured interview for *The Puppy Story* and *The Twins Story*.
- developmental differences in the number and type of expressive language performance errors in children's responses to the structured interview for *The Puppy Story* and *The Twins Story*.
- developmental differences in the number of performance errors (discourse + expressive language performance errors) in children's expressive language when responding to the structured interviews for *The Puppy Story* and *The Twins Story*.
- the relationship between gender and the number of performance errors occurring in children's expressive language when responding to the structured interviews for *The Puppy Story* and *The Twins Story*.

NB. The issues relating to gender differences in 2 and 3 above were identified only after the data had been collected. They were therefore not part of the original research predictions or initial aim of this second study.

4. Sections 17 - 18 pages 279 – 283

Research predictions

Results are presented for both the general and specific research predictions made at the beginning of this study (pages 112 – 113 this chapter).

Scores Obtained:

The following scores were obtained for all subjects by gender and age:

- Emotional ambivalence level (*The Puppy Story* structured interview Part 2).
- Emotional causality level (*The Puppy Story* structured interview Part 3).
- Linguistic ambiguity level (*The Twins Story* structured interview Part 2).
- Total number of devices identified per category in *The Puppy Story* (i.e. Part 1 + Part 2 + Part 3).
- Total number of devices identified per category in *The Twins Story* (i.e. Part 1 + Part 2).
- Total number of devices identified per category and per interview part in *The Puppy Story*.
- Total number of devices identified per category and per interview part in *The Twins Story*.
- Discourse errors (number and type) in *The Puppy Story* per interview part.
- Discourse errors (number and type) in *The Twins Story* per interview part.
- Expressive language performance errors (number and type) in *The Puppy Story* per interview part.
- Expressive language performance errors (number and type) in *The Twins Story* per interview part.

Children's Understanding of Emotional Ambivalence

The Puppy Story (Understanding and resolving of emotional ambivalence)

The following analyses (1 – 4) were performed to check that the results and developmental progression, noted by Donaldson and Westerman (1986) and confirmed by the first British study (Chapter 2), had been replicated in this second study.

1. To investigate if age (development) was related to children understanding emotional ambivalence (EA) in *The Puppy Story*.

Nonparametric testing was used due to the nature of the data obtained. This included an ordinal scoring system where children were allocated a rank 0 – 3 according to their responses to interview questions. Unlike the original American study and the British pilot, this second study did not include 4 – 5 year old children who score at the lower levels. No child in this second study was allocated the lowest Level 0 score. The data also related to a skewed distribution i.e. not a normal distribution curve.

A cross tabulation design was employed using Kendall's tau-b. 81.3% of the older children scored at the highest level (Level 3).

It was found that age (development) was significantly related to children's understanding of emotional ambivalence in *The Puppy Story* ($p < 0.001$).

Confounding Variables:

2. To investigate if sex, socioeconomic status or order of presentation of stories (confounding variables) were related to children understanding emotional ambivalence in *The Puppy Story*.

A cross tabulation design was employed using Kendall's tau-b.

No significant relationships were found between any of the confounding variables and children's understanding of emotional ambivalence:

For emotional ambivalence and sex $p = 0.272$

For emotional ambivalence and socioeconomic status $p = 0.800$

For emotional ambivalence and order of story presentation $p = 0.800$

Children's Theories of How Feelings Change (Emotional Causality)

The Puppy Story (Emotional Causality)

3. To investigate if age (development) was related to children's theories of how feelings change (emotional causality) in *The Puppy Story*.

Nonparametric testing was used due to the nature of the data obtained. This included an ordinal scoring system where children were allocated a rank 0 – 3 according to their responses to the interview questions. No child in this second study was allocated the lowest Level 0 score. The data also related to a skewed distribution i.e. not a normal distribution curve.

A cross tabulation design was employed using Kendall's tau-b.

It was found that age (development) was significantly related to children's theories of how feelings change in *The Puppy Story* ($p < 0.001$).

Confounding Variables:

4. To investigate if sex, socioeconomic status or order of presentation of stories (confounding variables) were related to children's theories of how feelings change in *The Puppy Story*.

A cross tabulation design was employed using Kendall's tau-b.

No significant relationships were found between any of the confounding variables and children's theories of how feelings change:

For emotional causality and sex $p = 0.484$

For emotional causality and socioeconomic status $p = 0.484$

For emotional causality and order of story presentation $p = 0.823$

Children's Understanding of Linguistic Ambiguity

The Twins Story (Understanding linguistic ambiguity)

The following analyses (5 - 6) were performed on data from *The Twins Story* in order to compare with the results of *The Puppy Story*.

5. To investigate if age (development) was related to children understanding linguistic ambiguity in *The Twins Story*.

Nonparametric testing was used due to the nature of the data obtained. This included an ordinal scoring system where children were allocated a rank 0 – 3 according to their responses to the interview questions. No child in this second study was allocated the lowest Level 0 score. The data related to a skewed distribution i.e. not a normal distribution curve.

A cross tabulation design was employed using Kendall's tau-b.

75% of the older children and 56.3% of the younger children scored at the highest level (3) for their understanding of linguistic ambiguity. A total of 21 out of the 32 children scored at this highest level (65.6%). It was found that age (development) was not significantly related to children's understanding of linguistic ambiguity in *The Twins Story* ($p = 0.252$).

Confounding Variables:

6. To investigate if sex, socioeconomic status or order of presentation of stories (confounding variables) were related to children understanding linguistic ambiguity in *The Twins Story*.

A cross tabulation design was employed using Kendall's tau-b.

No significant relationships were found between any of the confounding variables and children's understanding of linguistic ambiguity:

For linguistic ambiguity and sex $p = 0.477$

For linguistic ambiguity and socioeconomic status $p = 0.252$

For linguistic ambiguity and order of story presentation $p = 0.646$

Children's Understanding of Linguistic Ambiguity, Emotional Ambivalence and Emotional Causality

7. A nonparametric test of correlation (Spearman's rho) was used to see if children's understanding of linguistic ambiguity was significantly related to either their understanding of emotional ambivalence or their understanding of emotional causality. Due to the large number of statistical tests carried out only levels of $p < 0.01$ were taken to be significant. No correlations were found for either of these domains of children's understanding for either age group:

Subjects aged 7 – 8 years

For children's understanding of linguistic ambiguity and emotional ambivalence the correlation coefficient = 0.482.

For children's understanding of linguistic ambiguity and emotional causality the correlation coefficient = 0.533.

Subjects aged 10 – 11 years

For children's understanding of linguistic ambiguity and emotional ambivalence the correlation coefficient = 0.368.

For children's understanding of linguistic ambiguity and emotional causality the correlation coefficient = 0.399.

A nonparametric test of correlation (Spearman's rho) was also used to see if there was a correlation between children's understanding of emotional ambivalence and their understanding of emotional causality (*The Puppy Story*). No correlation was found for the younger children's understanding of emotional ambivalence and their theories of what makes feelings change. A correlation was found between the older children's understanding of emotional ambivalence and their theories of what makes feelings change

Subjects aged 7 – 8 years

For children's understanding of emotional ambivalence and their theories of emotional causality the correlation coefficient = 0.566

Subjects aged 10 – 11 years

For children's understanding of emotional ambivalence and their theories of emotional causality the correlation coefficient = 0.684

This is significant at the $p < 0.01$ level.

SUMMARY OF FINDINGS (1 – 7)

1. Age (development) was significantly related to children's understanding of emotional ambivalence in *The Puppy Story* ($p < 0.001$).
2. No significant relationships were found between any of the confounding variables (sex, socioeconomic status or order of presentation of stories) and children's understanding of emotional ambivalence.
3. Age (development) was significantly related to children's theories of how feelings change in *The Puppy Story* ($p < 0.001$).
4. No significant relationships were found between any of the confounding variables (sex, socioeconomic status or order of presentation of stories) and children's theories of how feelings change.
5. Age (development) was not significantly related to children's understanding of linguistic ambivalence in *The Twins Story*.
6. No significant relationships were found between any of the confounding variables (sex, socioeconomic status or order of presentation of stories) and children's understanding of linguistic ambiguity in *The Twins Story*.
7. No significant correlation was found between children understanding linguistic ambiguity and their understanding of either emotional ambivalence or emotional causality. A significant correlation was found between older children's ability to understand emotional ambivalence and their theories of emotional causality (*The Puppy Story*).

Children's Use of Cognitive-Linguistic Devices

The Puppy Story

8. Analyses were carried out to investigate relationships between children's understanding of emotional ambivalence and emotional causality and their use of cognitive-linguistic devices in their responses to the structured interview. Five devices were identified: *mental role play*, *mime*, *metaphor*, *personal experience* and *folk psychology*. These were described on pages 154 - 5.

Mental role play was only identified *after* the data had been generated. The exploratory nature of the research should therefore be kept in mind as a caveat when reading the following statistical results.

As for previous correlations, nonparametric testing (Spearman's rho) was used due to the nature of the data obtained. Due to the large number of statistical tests carried out only levels of $p < 0.01$ are taken to be significant. Box plots were also used to illustrate movement and connections within the data which may not have been obvious using nonparametric statistical analysis.

Mental role play

Nonparametric testing (Spearman's rho) was used to investigate the correlation between subjects' use of *mental role play* and their understanding of emotional ambivalence and their theories of how emotions change (causality).

Spearman's rho showed a high correlation (.729) between younger (7 - 8 years) children's use of *mental role play* and their scores for understanding emotional ambivalence.

Those younger children whose transcripts showed use of *mental role play* in their response to interview questions relating to *The Puppy Story* were significantly more likely to obtain a high score for their understanding of emotional ambivalence.

A high correlation (0.908) was also found between younger children's use of *mental role play* and their understanding of emotional causality.

Those younger children whose transcripts showed use of *mental role play* in their response to interview questions relating to *The Puppy Story* were significantly more likely to obtain a high score for their understanding of emotional causality.

No such correlations were found for the older (10 - 11 years) children. Correlation coefficient of 0.335 for *mental role play* and emotional ambivalence. Correlation coefficient of 0.027 for *mental role play* and emotional causality.

However, this lack of correlation is explained by a comparison of median scores for both age groups which shows a weighting towards older children having *no* instances of *mental role play* and high scores for understanding emotional ambivalence. (See below, Box plot Figure 8.1).

Figure 8.1

Box plot showing differences for both age groups in the median scores for children’s use of *mental role play* related to their emotional ambivalence scores (*The Puppy Story*)

EA = Emotional Ambivalence Score (level)
PROLE_PL = Number of instances of *mental role play* (*The Puppy Story*)

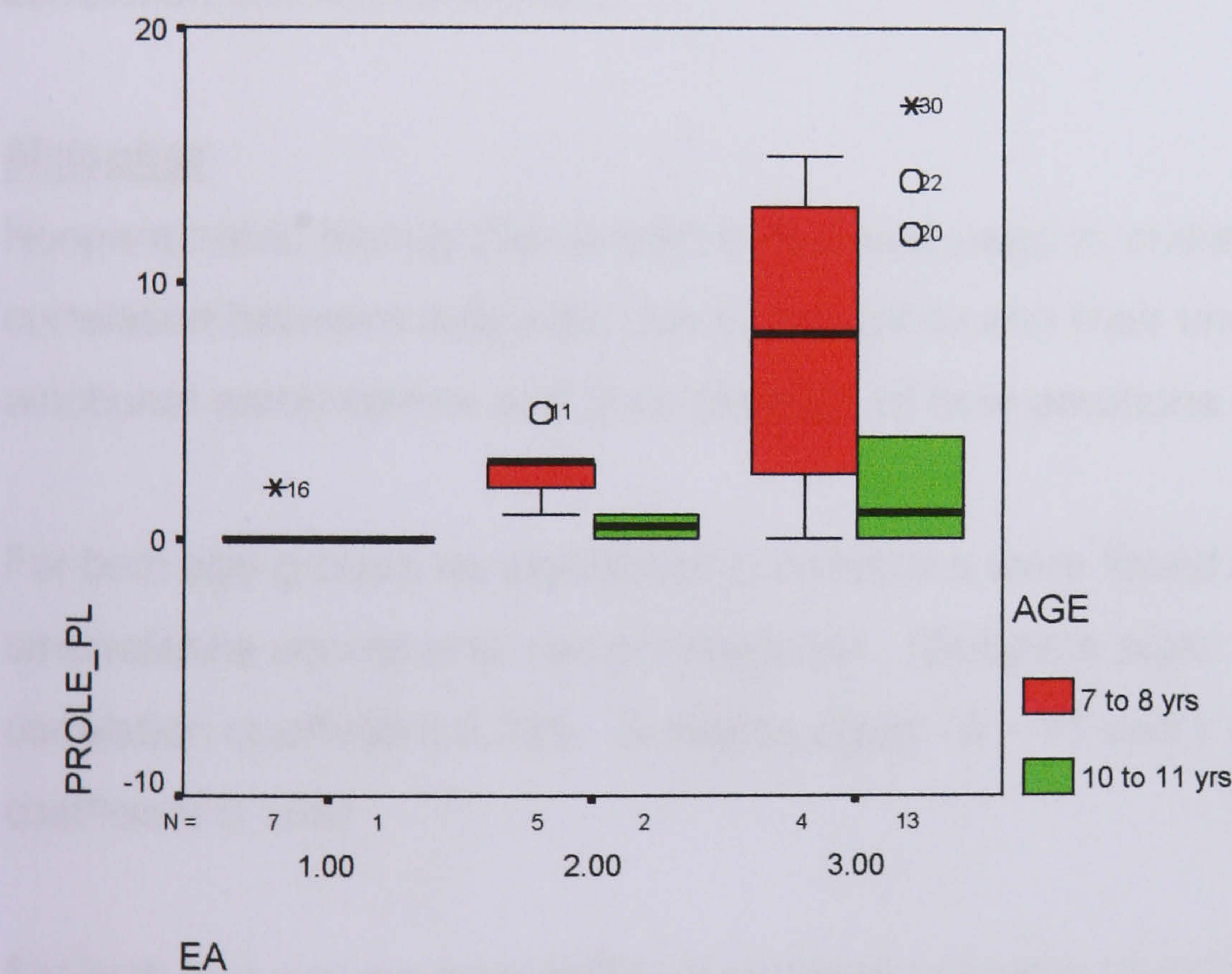


Figure 8.1 shows the increased amount of *mental role play* used by younger children who score highly for understanding emotional ambivalence in comparison to their lower scoring peers. Older children’s use of *mental role play* showed far less increase between the lower and higher scoring levels, the median scores at each level remaining similar. In addition, there is a weighting in the older children’s median scores towards no, or fewer, instances of *mental role play* and the higher scores (levels) for understanding emotional ambivalence.

Mime

Nonparametric testing (Spearman's rho) was used to investigate the correlation between subjects' use of *mime* and their understanding of emotional ambivalence and their theories of how emotions change (causality).

For both age groups no significant correlations were found between emotional ambivalence scores and use of *mime*. (Subjects aged 7 – 8 years correlation coefficient 0.244. Subjects aged 10 – 11 years correlation coefficient 0.229).

For both age groups no significant correlations were found between children's theories of how emotions change (causality) and use of *mime*. (Subjects aged 7 – 8 years correlation coefficient 0.315. Subjects aged 10 – 11 years correlation coefficient 0.365).

Metaphor

Nonparametric testing (Spearman's rho) was used to investigate the correlation between subjects' use of *metaphor* and their understanding of emotional ambivalence and their theories of how emotions change (causality).

For both age groups no significant correlations were found between emotional ambivalence scores and use of *metaphor*. (Subjects aged 7 – 8 years correlation coefficient 0.385. Subjects aged 10 – 11 years correlation coefficient 0.166).

For both age groups no significant correlations were found between children's theories of how emotions change (causality) and use of *metaphor*. (Subjects aged 7 – 8 years correlation coefficient 0.371. Subjects aged 10 – 11 years correlation coefficient 0.212).

Box plot Figure 8.2 (below) shows that for younger children (7 – 8 years of age) increased use of *metaphor* occurred as higher levels of understanding of emotional ambivalence were achieved. This was not the case for the older children (10 – 11 years of age). This suggests that *metaphor* may play an

important role in younger children’s emerging understanding of emotional ambivalence.

Figure 8. 2
Box plot showing median scores for children’s use of metaphor related to their understanding of emotional ambivalence (EA) in *The Puppy Story* (both age groups)

EA = Emotional Ambivalence Score (level)
PMETAHO = Number of instances of *metaphor* (*The Puppy Story*)

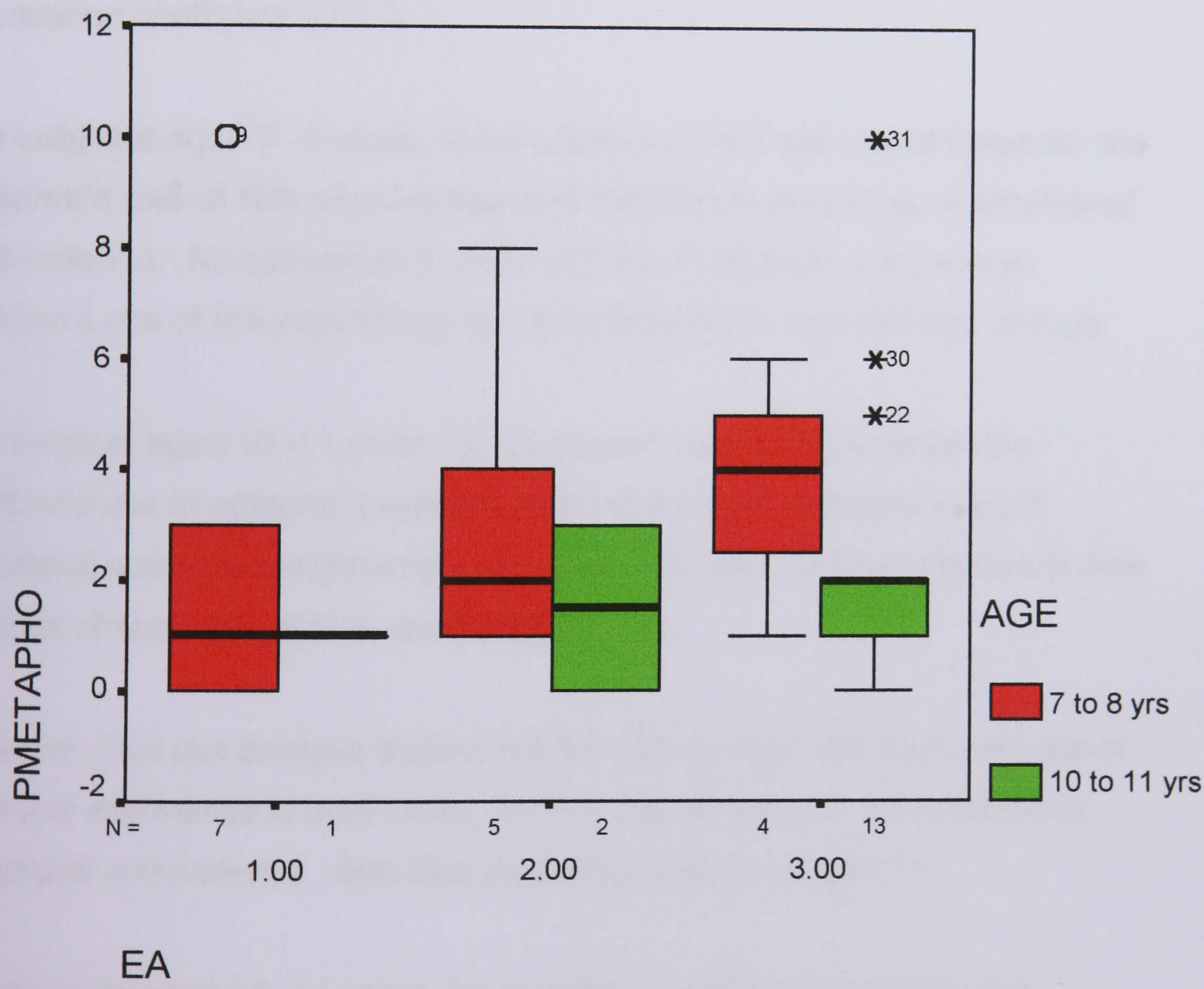


Figure 8.2 shows that for younger children, increased use of *metaphor* occurred as higher levels of understanding of emotional ambivalence were achieved. While older children achieved higher levels of understanding of emotional ambivalence overall, this is not linked to increased use of metaphor. This suggests that *metaphor* may play an important role in younger children’s emerging understanding of emotional ambivalence.

Personal experience and Folk psychology

Both these categories of devices used by children in their response to interview questions were small in recorded instances with a number of subjects having no (zero) examples. (7 – 8 year olds: 4 boys and 6 girls had no examples of both *personal experience* and *folk psychology*; 10 – 11 year olds: 1 boy and 3 girls had no examples of both *personal experience* and *folk psychology*). For this reason the following analysis of these categories should be treated with caution.

For subjects aged 7-8 years, no correlation was found between the children's use of *personal experience* and their understanding of emotional ambivalence (correlation coefficient 0.506), or their theories of how feelings change (correlation coefficient 0.571).

For subjects aged 7- 8 years, a correlation (.646) was found between the children's use of *folk psychology* and their understanding of emotional ambivalence. No correlation (0.054) was found between the younger children's use of *folk psychology* and their theories of how feelings change.

For subjects aged 10 -11 years, no correlation was found between the children's use of *personal experience* and either their understanding of emotional ambivalence (correlation coefficient 0.447) or their theories of how feelings change (correlation coefficient 0.100).

However, Box plot analysis shows that for both age groups increased use of *personal experience* is associated with the higher levels of understanding emotional ambivalence. See **Box plot Figure 8.3** on page 210.

For subjects aged 10 -11 years, no correlation was found between the children's use of *folk psychology* and either their understanding of emotional ambivalence (correlation coefficient 0.290) or their theories of how feelings change (correlation coefficient 0.022).

Box plot Figure 8.4, on page 211, shows differences between the younger and older children's use of folk psychology and higher scores (levels) for understanding emotional ambivalence. The relationship between younger children's use of *folk psychology* and the highest level (3) for emotional ambivalence was found to be statistically significant. For older children, while the use of *folk psychology* increased relative to higher levels of understanding ambivalent emotions, the increase was less pronounced and not statistically significant.

For subjects aged 10 –11 years a correlation (.768) was found between their use of *folk psychology* and *mental role play*.

Figure 8. 3

Box plot showing median scores for children’s use of personal experience related to their understanding of emotional ambivalence (EA) in The Puppy Story (both age groups)

EA = Emotional Ambivalence Score (level)
P_PEXP = Number of instances of use of personal experience (The Puppy Story)

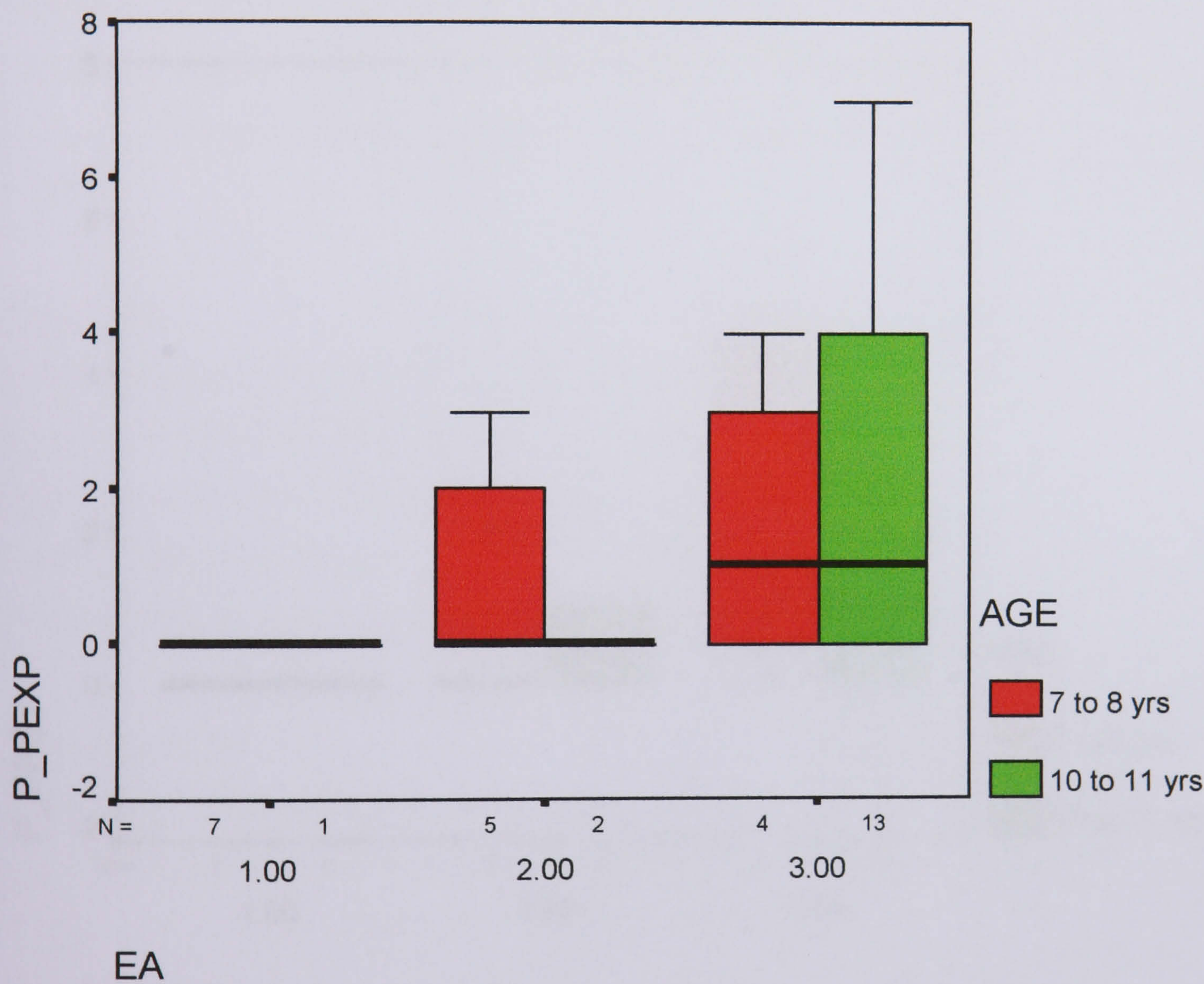


Figure 8.3 shows that for both age groups increased use of personal experience is associated with the higher levels of understanding emotional ambivalence, with similar amounts of personal experience used by both age groups at the highest level of understanding emotional ambivalence (level 3).

Figure 8. 4

Box plot showing median scores for children's use of *folk psychology* related to their understanding of emotional ambivalence (EA) in *The Puppy Story* (both age groups)

EA = Emotional Ambivalence Score (level)

P_FPSY = Number of instances of use of *folk psychology* (*The Puppy Story*)

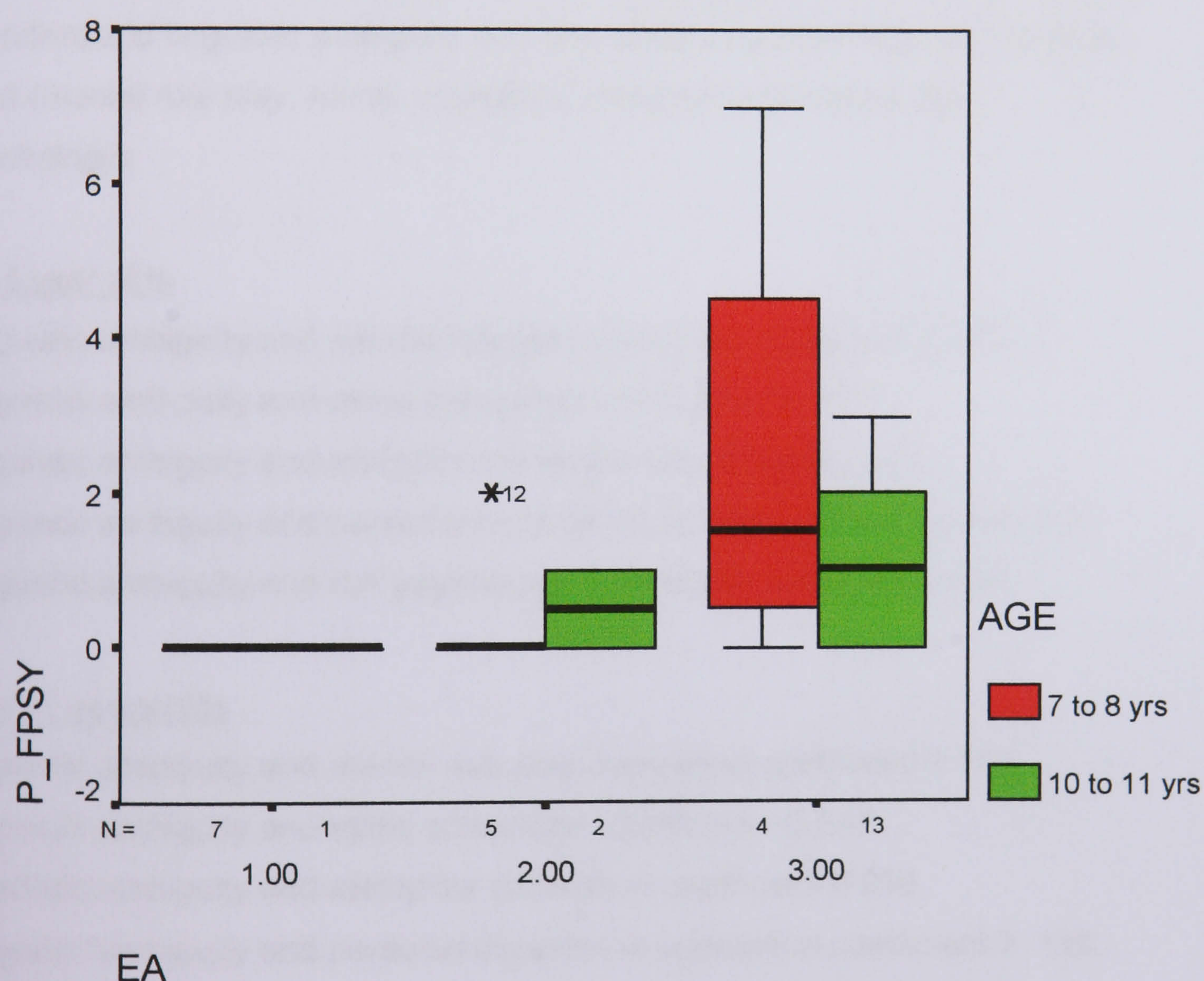


Figure 8.4 shows the relationship for younger children between their use of *folk psychology* and the highest level (3) for understanding of emotional ambivalence. This relationship was found to be statistically significant. For older children while use of *folk psychology* increased for higher levels of understanding of ambivalent emotions, this increase was less pronounced and not found to be statistically significant.

Children's Use of Cognitive-Linguistic Devices

The Twins Story

9. Analyses were also carried out to investigate relationships between children's ability to detect and resolve linguistic ambiguity (*The Twins Story*) and their use of cognitive-linguistic devices in their response to the structured interview.

For both age groups, no correlations were found between the children's ability to understand linguistic ambiguity and any of the cognitive-linguistic devices used (*mental role play, mime, metaphor, personal experience, folk psychology*):

7 – 8 year olds

Linguistic ambiguity and *mental role play* correlation coefficient 0.575.

Linguistic ambiguity and *mime* correlation coefficient –0.107.

Linguistic ambiguity and *metaphor* correlation coefficient 0.205.

Linguistic ambiguity and *personal experience* correlation coefficient 0.487.

Linguistic ambiguity and *folk psychology* correlation coefficient 0.046.

10 – 11 years olds

Linguistic ambiguity and *mental role play* correlation coefficient 0.115.

Linguistic ambiguity and *mime* correlation coefficient –0.047.

Linguistic ambiguity and *metaphor* correlation coefficient 0.059.

Linguistic ambiguity and *personal experience* correlation coefficient 0.118.

Linguistic ambiguity and *folk psychology* correlation coefficient –0.170.

Summary of Findings (8 - 9)

Age group 7 - 8 years *The Puppy Story*

- Significant correlation between *mental role play* and younger children's understanding of emotional ambivalence (EA).
- Significant correlation between *mental role play* and younger children's theories about what causes emotions to change.
- Significant correlation between *folk psychology* and younger children's understanding of emotional ambivalence. (Reported with caution due to low numbers).
- No correlation between any other cognitive-linguistic device (*mime, metaphor, personal experience*) and younger children's understanding of either emotional ambivalence or emotional causality.

Age group 7 - 8 years *The Twins Story*

- No significant correlation between any of the cognitive-linguistic devices (*mental role play, mime, metaphor, personal experience, folk psychology*) and younger children's ability to understand linguistic ambiguity.

Age group 10 - 11 years *The Puppy Story*

- Significant correlation between older children's use of *folk psychology* and their use of *mental role play*. (Reported with caution due to low numbers).
- No significant correlation between any other cognitive-linguistic device (*mental role play, mime, metaphor, personal experience, folk psychology*) and older children's ability to understand either emotional ambivalence or emotional causality.

Age group 10 - 11 years *The Twins Story*

- No correlation between any of the cognitive-linguistic devices (*mental role play, mime, metaphor, personal experience, folk psychology*) and older children's ability to understand linguistic ambiguity.

Differences in the number of cognitive-linguistic devices used by children in response to *The Puppy Story* and *The Twins Story*

10. The following analysis compares the total number of cognitive-linguistic devices used by subjects at different ages when responding to the structured interviews for *The Puppy Story* and for *The Twins Story*. The five devices, as previously identified, are: *mental role play* (where the subject answers questions in the character of the story protagonist), *mime* (where the subject mimes the answer to a question), use of *metaphor*, *personal experience* (where the subject answers a question by referring to an event or feeling which he experienced in his own life), *folk psychology* (where the subject answers a question by referring to a body of commonly held knowledge about how people think, feel or act).

Table 10.1 shown below gives the total number of cognitive-linguistic devices used by children aged 7 – 8 years and 10 - 11 years for each part of *The Puppy Story* and *The Twins Story*. P1 = part one of *The Puppy Story* interview which questions children about the basic single emotion love in the first part of the story. P2 = part two of *The Puppy Story* interview which questions children about ambivalent emotion introduced in the second part of the story. P3 = part three of *The Puppy Story* interview which questions children about what makes feelings come and go (emotional causality). Tw1 = part one of *The Twins Story* interview which questions children about the feelings of the twins in the first part of the story. Tw 2 = part two of *The Twins Story* interview which questions children about the linguistic ambiguity introduced in the second part of the story

Devices (all devices, both sexes)

Table 10. 1

Developmental differences

7 – 8 yrs	10 -11 yrs	(differences between scores)
P1 = 12	P1 = 8	(<4)
P2 = 58	P2 = 67	(>9)
P3 = 68	P3 = 62	(<6)
Tw1 = 26	Tw1 = 31	(>5)
Tw2 = 41	Tw2 = 20	(<21)

The above table (10. 1) shows the total number of devices used in response to each part of the structured interviews, and for both age groups. At this level of analysis, scores per story part remain remarkably stable over time with little variation between the age groups. The exception to this is a decrease in the older children’s use of devices when answering questions relating to the linguistic ambiguity in *The Twins Story* (Tw2). See also **Table 10. 2** below and **Bar Charts 10.1** and **10. 2** page 218.

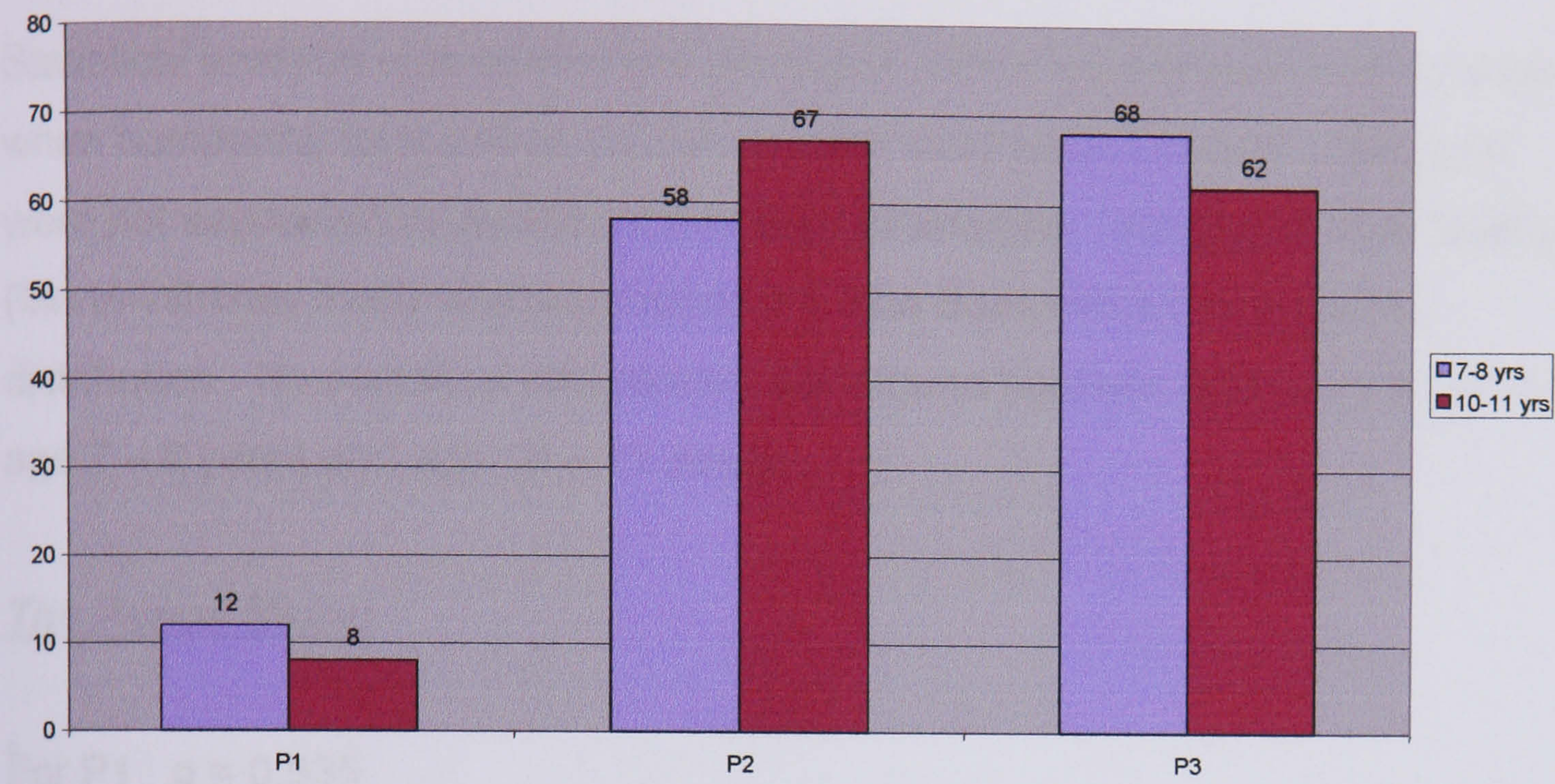
Table 10. 2

Comparison of the number of devices used by the two age groups for parts one and parts two of *The Puppy Story* and *The Twins Story*

7 – 8 yrs	10 – 11 yrs
P1 = 12	P1 = 8
Tw1 = 26	Tw1 = 31
P2 = 58	P2 = 67
Tw2 = 41	Tw2 = 20

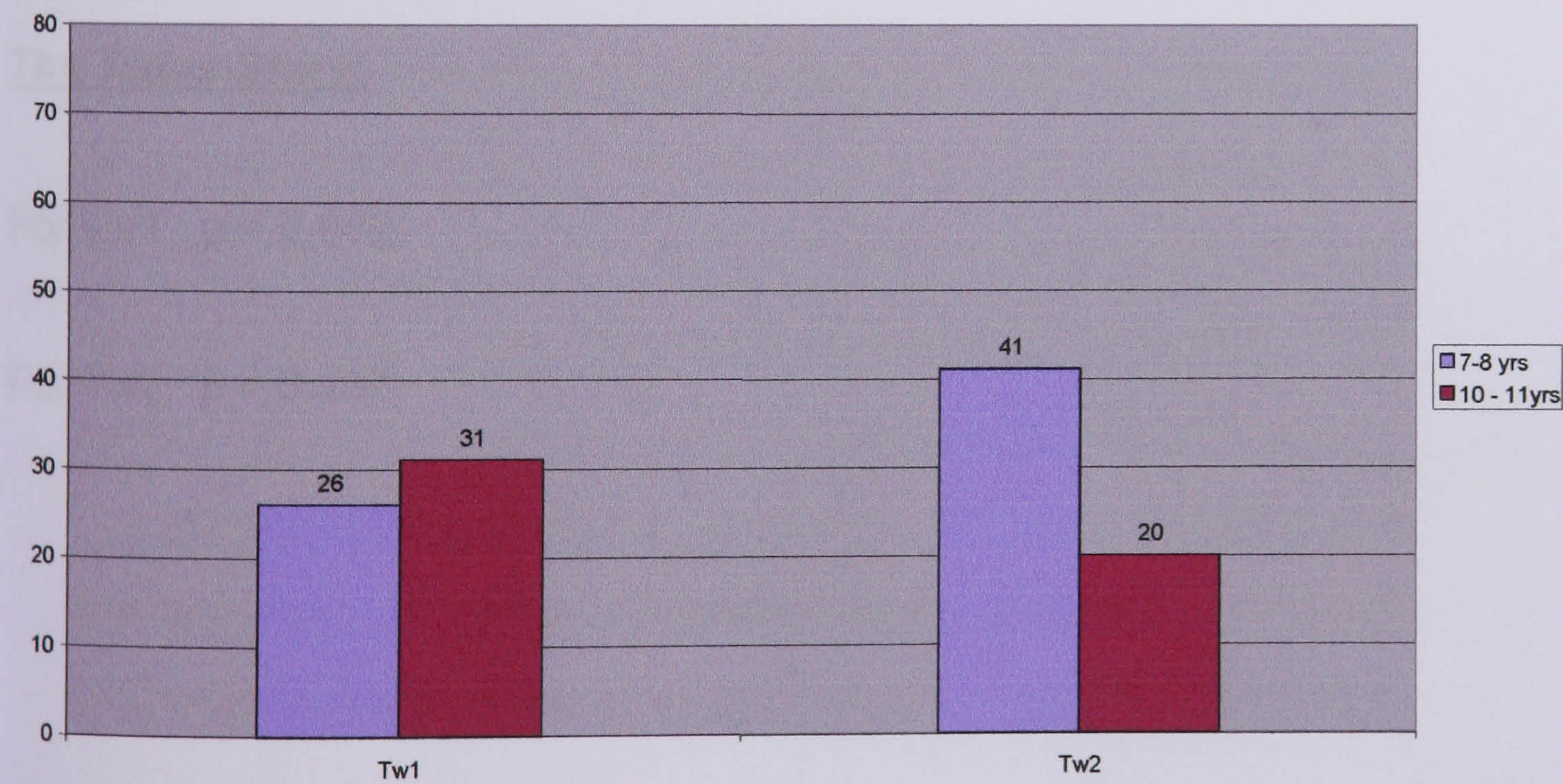
Table 10. 2 (above) shows that for both age groups, more devices were used for the first part of *The Twins Story*, in comparison to *The Puppy Story*. This trend increased slightly with age. The reverse is true of part two of the stories with more devices used in response to the second part of *The Puppy Story* than *The Twins Story*. While the number of devices used by older children also increased slightly with age for *The Puppy Story* (P2), the number used for *The Twins Story* (Tw2) *decreased* by 48.78% (numbers in bold). However, no statistical differences were found between the age groups for the total number of devices used per story part for either story (*The Puppy Story* and *The Twins Story*). See page 219 for the statistical results obtained.

Bar Chart 10.1
Comparison of the total number of devices used by children at 7 - 8 years of age and 10 - 11 years of age for each part of *The Puppy Story*



Bar chart 10.1 shows a similar total number of devices used by each age group for each story interview part of *The Puppy Story*.

Bar Chart 10.2
Comparison of the total number of devices used by children aged 7 - 8 years and 10 - 11 years for each part of *The Twins Story*



Bar chart 10.2 shows a similar number of devices used by each age group for part 1 of *The Twins Story* interview. The total number of devices used for part 2 of *The Twins Story* interview decreased by 48.78% at age 10 – 11 years. However, this decrease was not found to be statistically significant (see page 219).

Statistical Analysis (Total Numbers of Devices by Age and Story Interview Part)

Statistical analysis was carried out looking at differences between age groups when comparing total scores for devices per story interview part. Subjects were not separated by gender at this level of analysis. Nonparametric testing (Mann-Whitney Test) was used since the data does not follow a normal distribution. No statistical differences were found between scores obtained at age 7 – 8 years and age 10 – 11 years.

The Puppy Story:

For P1 $p = 0.535$

For P2 $p = 0.924$

For P3 $p = 0.878$

The Twins Story:

For Tw1 $p = 0.692$

For Tw2 $p = 0.497$

Differences in the number and type of cognitive-linguistic devices used in *The Puppy Story* and *The Twins Story*.

11. The next level of investigation looked at differences between the number and type of cognitive-linguistic devices used by children in response to the different parts of the structured interviews for *The Puppy Story* and *The Twins Story*.

Parts one of *The Puppy Story* and *The Twins Story* introduce the characters and settings. Parts two of *The Puppy Story* and *The Twins Story* contain the two types of ambiguity (emotional ambivalence and linguistic ambiguity respectively). Part 3 of *The Puppy Story* interview elicits children’s causal theories of emotions (what causes emotions to come and go). Part 3 of *The Puppy Story* interview has no counterpart in *The Twins Story* interview.

It should be noted that some recorded values are very small. Further investigation would be necessary with a larger sample size to confirm the trends seen in this data.

Table 11.1 below shows the number and type of cognitive-linguistic devices used by the two different age groups in response to the interview questions for the different parts of *The Puppy Story* and *The Twins Story*. See also **Bar charts 11.1 – 11.4** pages 222 – 223 and 227 - 228. **Pie charts 11.1 – 11.8** are used to compare the percentages of the different devices used in response to part one and part two of *The Puppy Story* and *The Twins Story* by each of the two age groups (7 – 8 years and 10 – 11 years). See pages 224 – 226 and 230 - 231.

Total number of Cognitive-linguistic devices by type and by age

Table 11. 1

Total number of devices per story interview part at ages 7 – 8 years and 10 – 11 years. The scores for the youngest group are given first.

	P1	P1	P2	P2	P3	P3
mrp	4	5	13	19	30	30
mime	5	2	5	2	11	3*
metaphor	2	0	30	29	16	8
p.exp.	1	1	3	10**	7	14**
f.psych.	0	0	7	7	4	7
	—	—	—	—	—	—
TOTAL	12	8	58	67	68	62

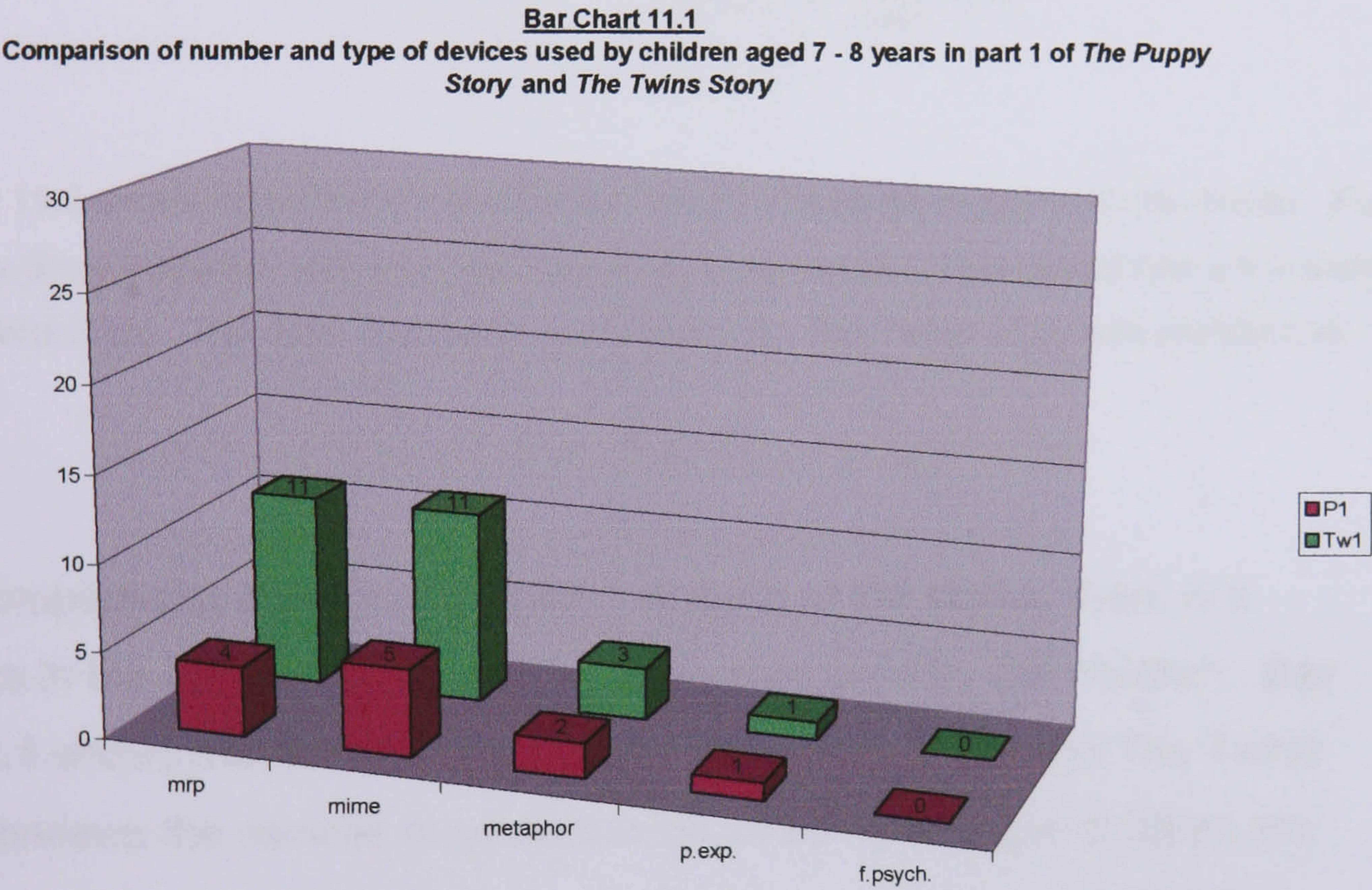
	Tw1	Tw1	Tw2	Tw2
mrp	11	17	28	14
mime	11	9	7	3
metaphor	3	0	2	0
p.exp.	1	4	4	2
f.psych.	0	1	0	1
	—	—	—	—
TOTAL	26	31	41	20

(*less *mime* than younger group.)
(**more *personal experience* than younger group.)

mrp = mental role play; p.exp = personal experience; f.psych = folk psychology
P1 = *The Puppy Story* part 1; P2 = *The Puppy Story* part 2; P3 = *The Puppy Story* part 3; Tw1 = *The Twins Story* part 1; Tw2 = *The Twins Story* part 2

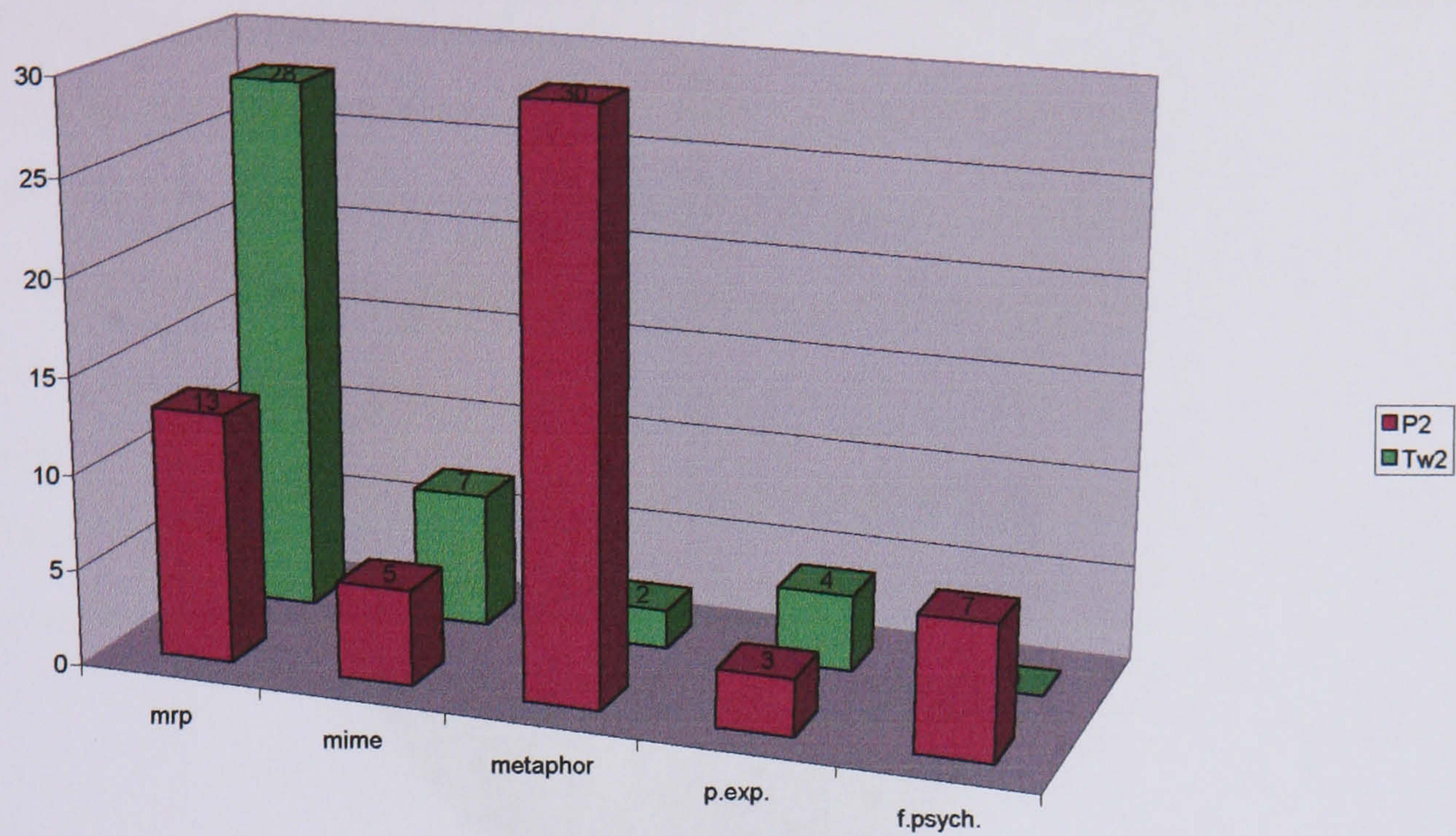
Bar chart 11.1 compares the number and type of devices used by children aged 7 – 8 years of age in response to the structured interviews for part 1 of *The Puppy Story* and part 1 of *The Twins Story*.

Bar chart 11. 2 compares the number and type of devices used by children aged 7 – 8 years of age in response to the structured interviews for part 2 of *The Puppy Story* and part 2 of *The Twins Story*.



Bar Chart 11.1 shows that while more devices in total are used in response to part 1 of *The Twins Story* than part 1 of *The Puppy Story*, the types of devices used most frequently are similar for both stories.

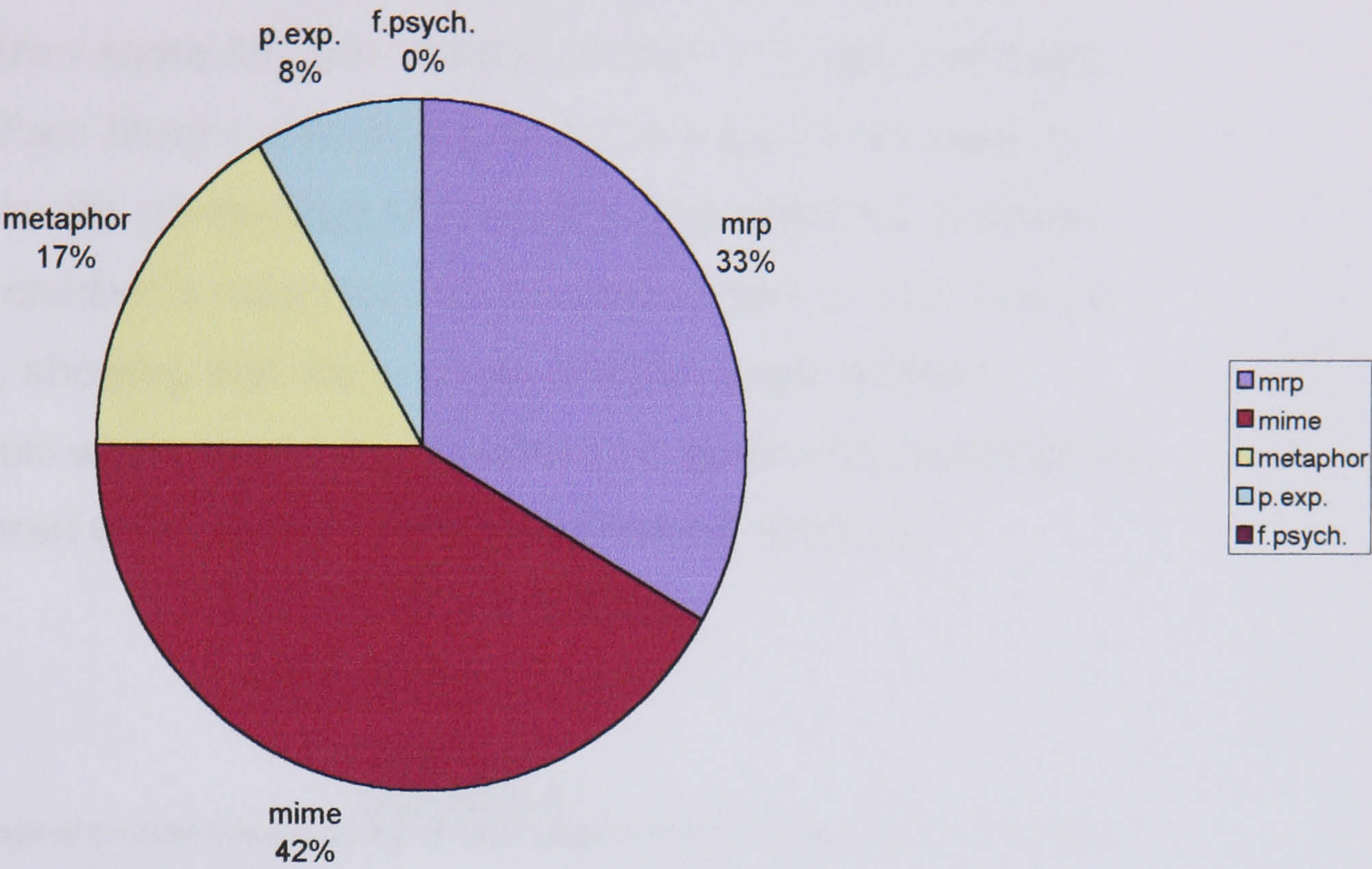
Bar Chart 11.2
Comparison of number and type of devices used by children aged 7 - 8 years in part 2 of *The Puppy Story* and *The Twins Story*



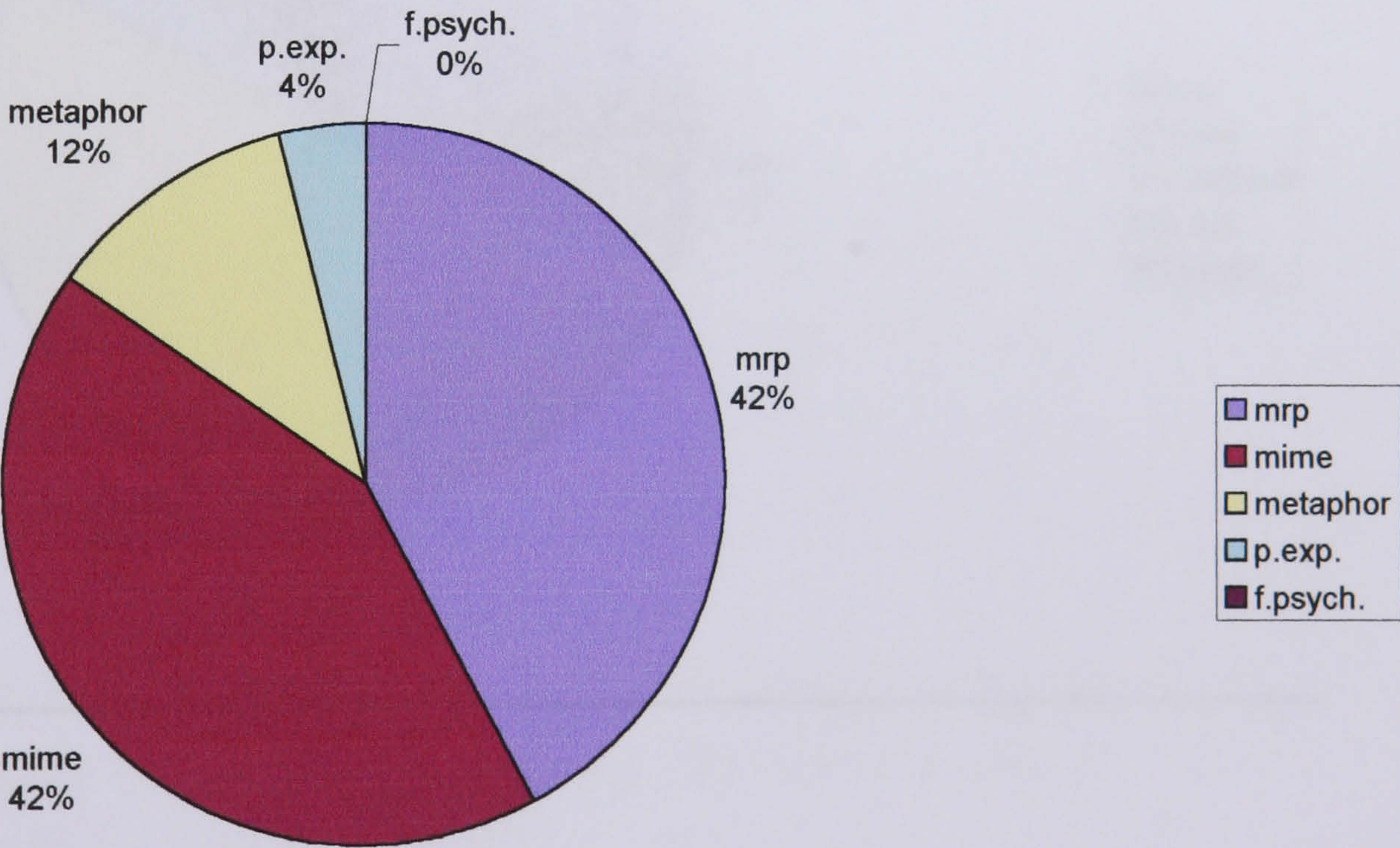
Bar Chart 11.2 shows that different devices are used in response to part 2 of the stories. For *The Puppy Story* *metaphor* was the most frequently used device. This device has a low score for *The Twins Story*. The most frequently used device for *The Twins Story* was *mental role play*.

These comparisons show that for part 1 of each of the stories there is a difference in the *number*, but not *type*, of devices used by the children. **Bar chart 11.1** shows that for part one of both *The Puppy Story* and *The Twins Story* interviews the devices most commonly used by younger children are *mental role play* and *mime*. However, overall more devices are used by children when responding to *The Twins Story* than *The Puppy Story*. **Pie charts 11. 1** and **11. 2** below make this quantitative and not qualitative difference more obvious. Here the number of devices used is seen as a percentage of the total figure. Both pie charts show a similarity in the percentages for the different types of devices used by the children. For part I of *The Puppy Story* *mime* accounts for 42% of the responses and *mental role play* 33%. For Part 1 of *The Twins Story* *mime* accounts for 42% of the responses and *mental role play* 42%. The difference in the responses to the first part of each story is therefore one of quantity (number) rather than type.

Pie chart 11. 1
Percentage of devices used by children aged 7 - 8 years in response to part 1 of *The Puppy Story*



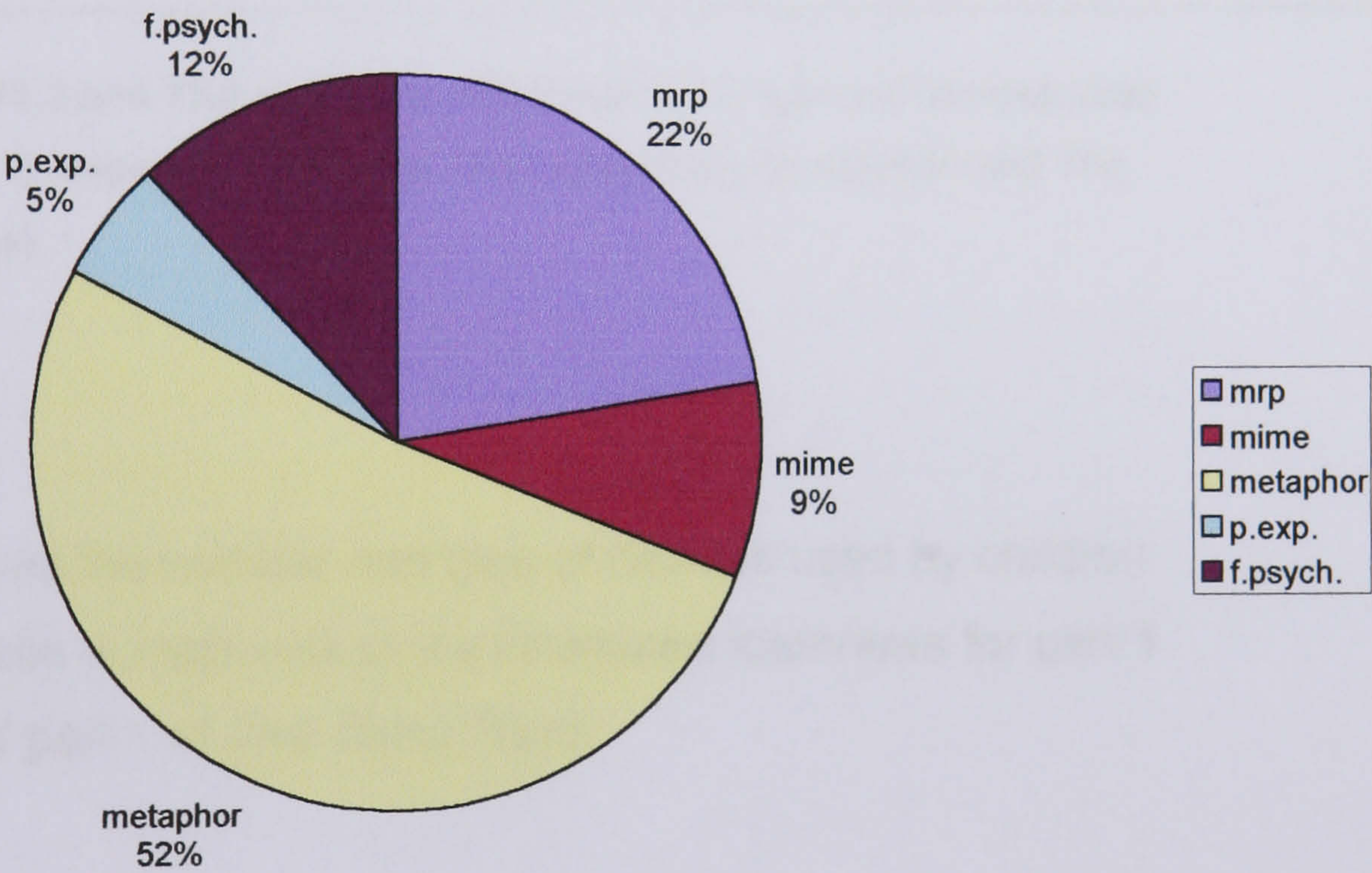
Pie Chart 11. 2
Percentage of devices used by children aged 7 - 8 years in response to part 1 of *The Twins Story*



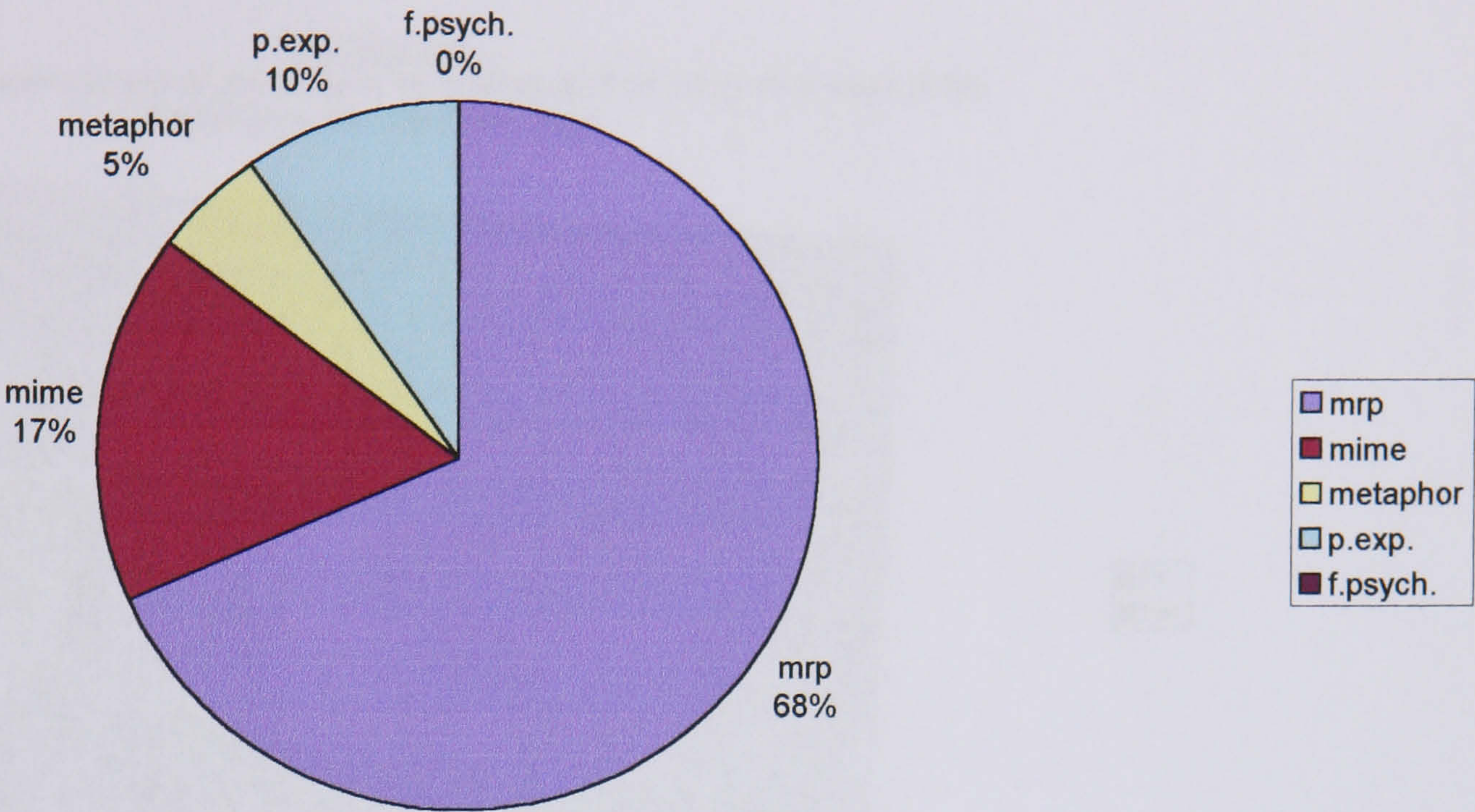
Comparison of **Pie Charts 11.1** and **11.2** shows the similarity in the types of devices most frequently used by subjects in response to part 1 of both *The Puppy Story* and *The Twins Story*.

This picture changes when the devices used in response to the second part of both stories are compared. **Bar charts 11. 1** and **11. 2** show a difference in the type of devices used. In *The Puppy Story* *metaphor* is the main device used by the children (raw score 30), percentage of total 52% (see **Pie chart 11. 3** below). In *The Twin Story* *mental role play* is the main device used by the children (raw score 28), percentage of total 68% (**Pie chart 11. 4** below). The difference in the children's responses to the second part of each story is therefore one of type, showing that the younger children used different cognitive-linguistic tools when answering questions on emotional ambivalence (*metaphor*) as compared with linguistic ambiguity (*mental role play*).

Pie Chart 11. 3
Percentage of devices used in part 2 of *The Puppy Story* by children aged 7 - 8 years



Pie Chart 11. 4
Percentage of devices used in part 2 of *The Twins Story* by children aged 7 - 8 years

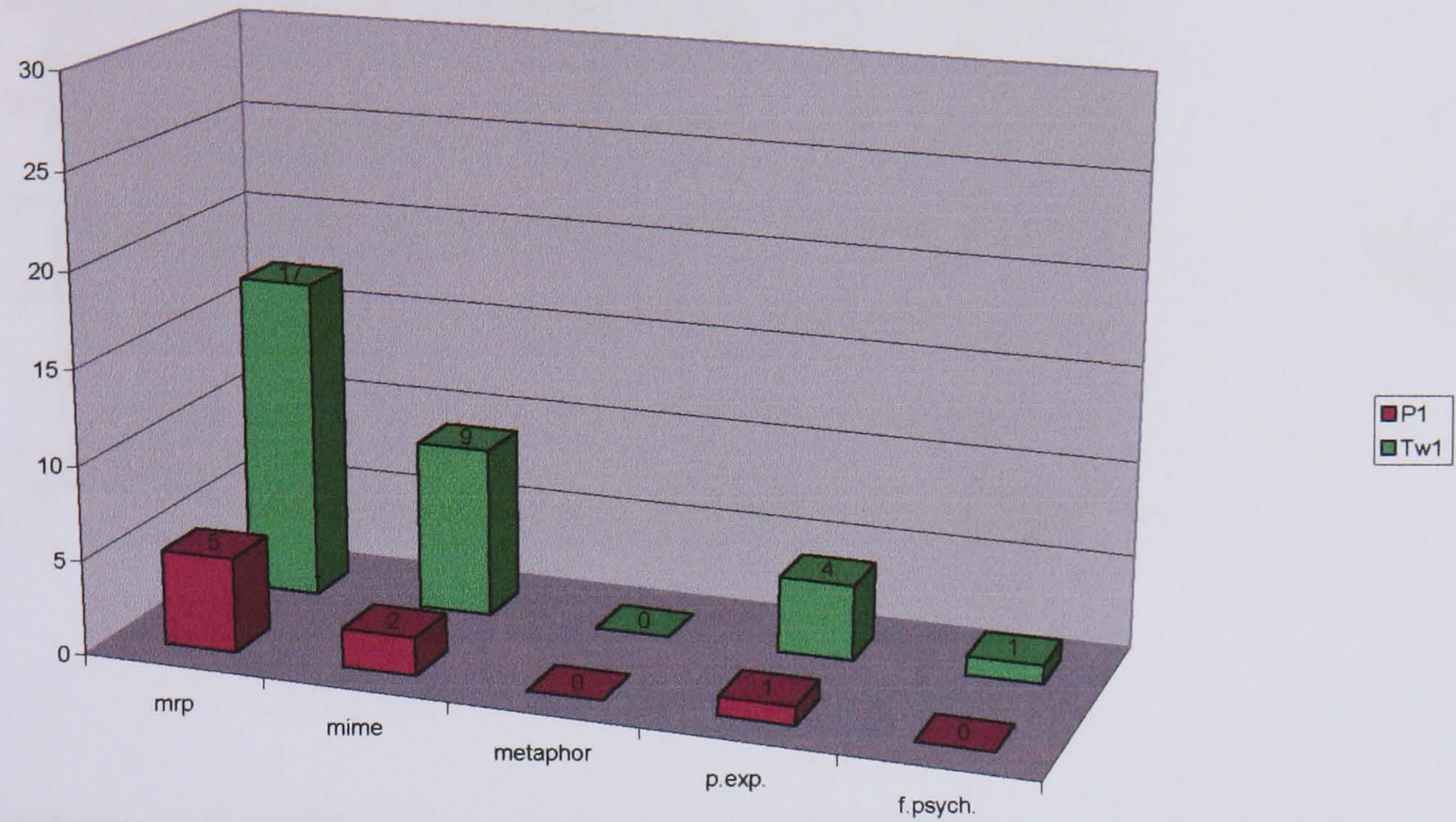


Comparison of **Pie Charts 11.3** and **11.4** shows the difference in the types of devices used most frequently by subjects in response to part 2 of *The Puppy Story* (*metaphor*) and *The Twins Story* (*mental role play*).

Bar chart 11. 3 compares the number and type of devices used by children aged 10 – 11 years of age in response to the structured interviews for part 1 of *The Puppy Story* and part 1 of *The Twins Story*.

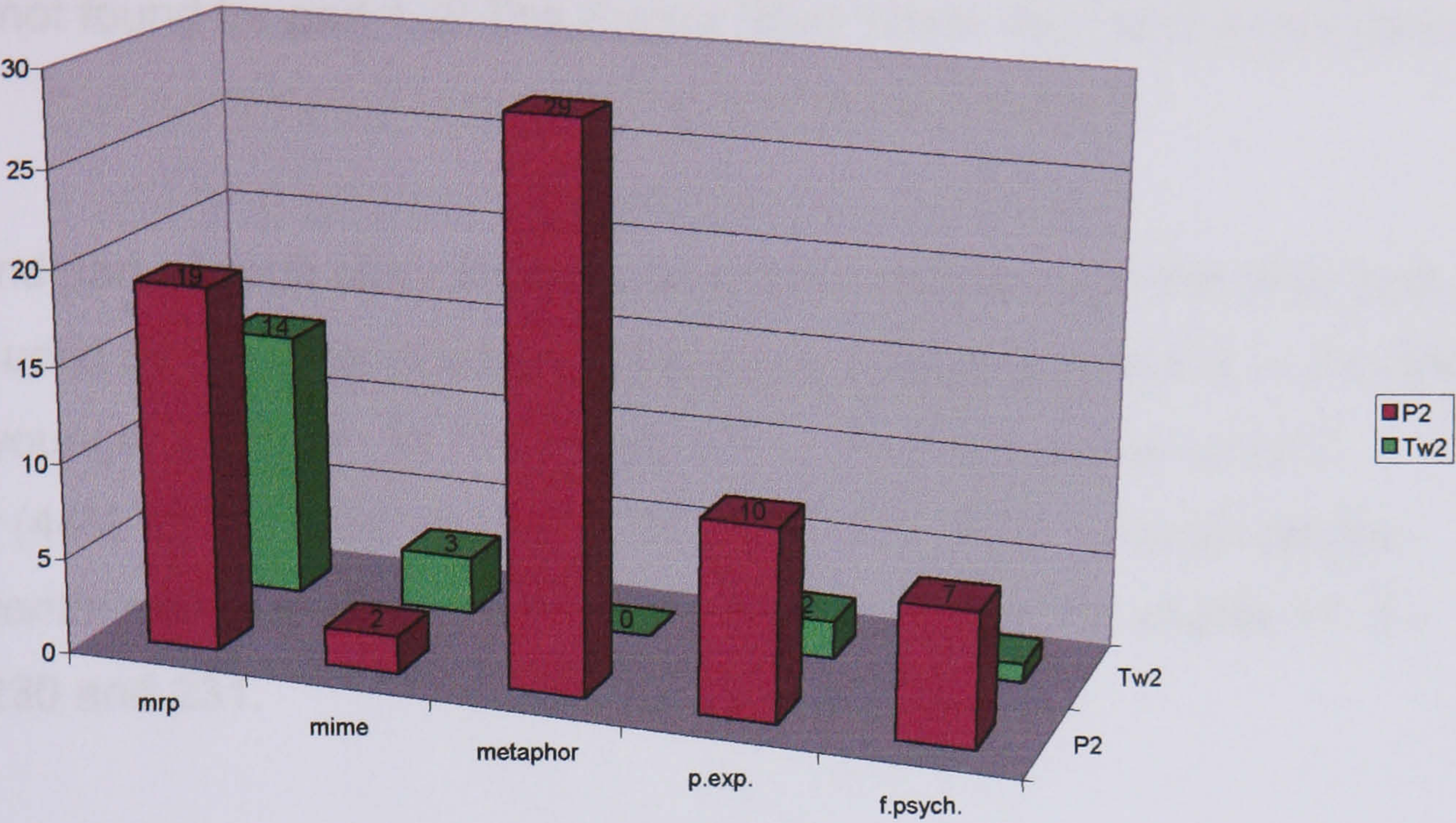
Bar chart 11. 4 compares the number and type of devices used by children aged 10 – 11 years of age in response to the structured interviews for part 2 of *The Puppy Story* and part 2 of *The Twins Story*.

Bar Chart 11.3
Comparison of number and type of devices used by children aged 10 - 11 years in part 1 of *The Puppy Story* and *The Twins Story*



Bar Chart 11.3 shows that the older subjects' use of devices in response to part 1 of the stories followed a similar pattern to that of the younger subjects (7 – 8 years). More devices were used in response to part 1 of *The Twins Story* than part 1 of *The Puppy Story* and this difference was more pronounced in the older group, the overall number of devices having decreased for *The Puppy Story*. This suggests that part 1 of *The Puppy Story* had become less challenging for the older children while part 1 of *The Twins Story* remained demanding. The types of devices used however remained similar for each story.

Bar chart 11.4
Comparison of number and type of devices used by children aged 10 - 11 years in part 2 of *The Puppy Story* and *The Twins Story*



Bar Chart 11.4 shows that the older subjects' use of devices in response to part 2 of the stories followed a similar pattern to that of the younger subjects (7 – 8 years). Different devices were used in response to the two stories: *metaphor* continued to be the device most frequently used in response to part 2 of *The Puppy Story* and *mental role play* was the device most frequently used in response to *The Twins Story*. Overall the number of devices used for *The Twins Story* had decreased, while those for *The Puppy Story* remained similar to the number used by the younger children. This suggests that, unlike part 2 of *The Twins Story*, part 2 of *The Puppy Story* continued to be cognitively challenging for the older children.

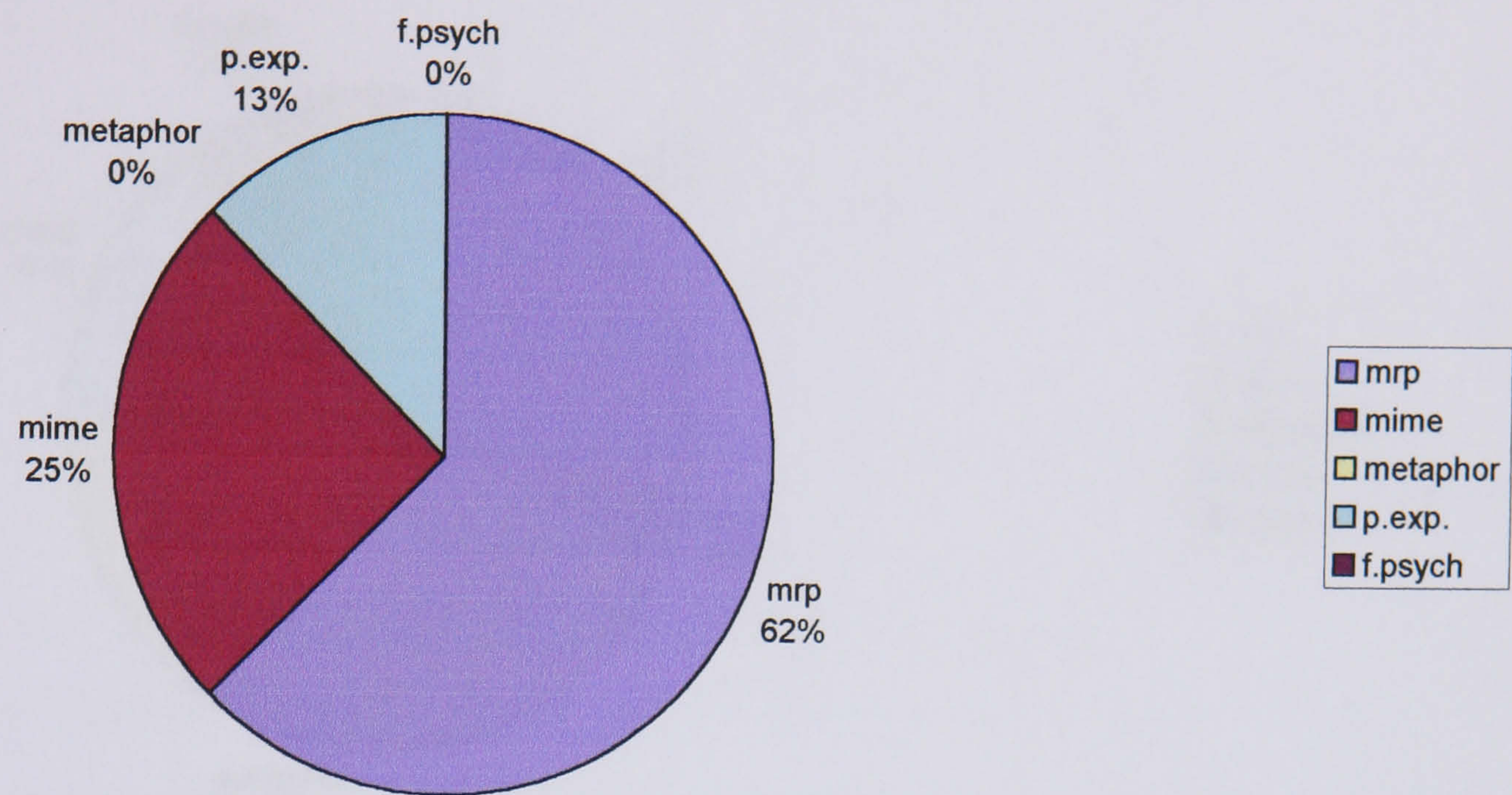
As with the younger subjects these comparisons show quantitative, but not qualitative, differences in the devices used by the older children in the first part of each story. *Mental role play* is the device used most in response to part 1 of both stories. However overall, as with the younger children, more devices are used in response to *The Twins Story* part 1 than *The Puppy Story* part 1. This trend is now more pronounced suggesting that part 1 of *The Twins Story* continues relatively demanding of older children's use of cognitive-linguistic devices when compared to part 1 of *The Puppy Story*.

For both stories, and all story parts, the use of *mime* decreased suggesting that this tool becomes increasingly redundant as children get older. There

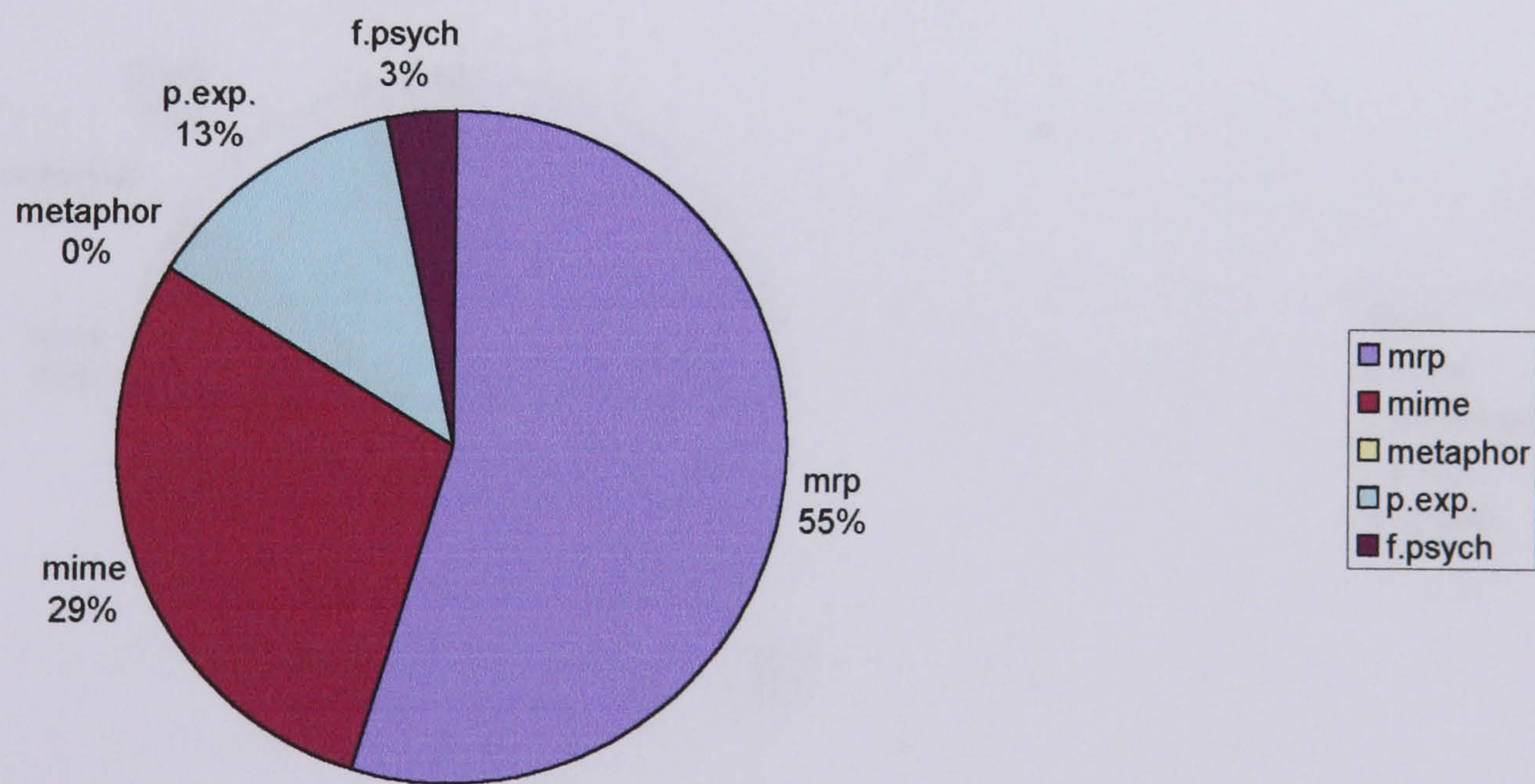
was a slight increase in the older children's use of *personal experience* and *folk psychology* when responding to questions on part 1 of *The Twins Story*. This was not found for part 1 of *The Puppy Story* where few devices are used in total.

The second part of each story shows a qualitative difference in the main type of device used by the older children. This same difference is found in the data from the younger children. In *The Puppy Story*, the main device used is *metaphor* (44% for the older children). In *The Twins Story* the main device used is *mental role play* (70% for the older children). See **Pie charts 11. 5 – 8** pages 230 and 231.

Pie chart 11. 5
Percentage of devices used by children aged 10 - 11 years in response to part 1 of *The Puppy Story*

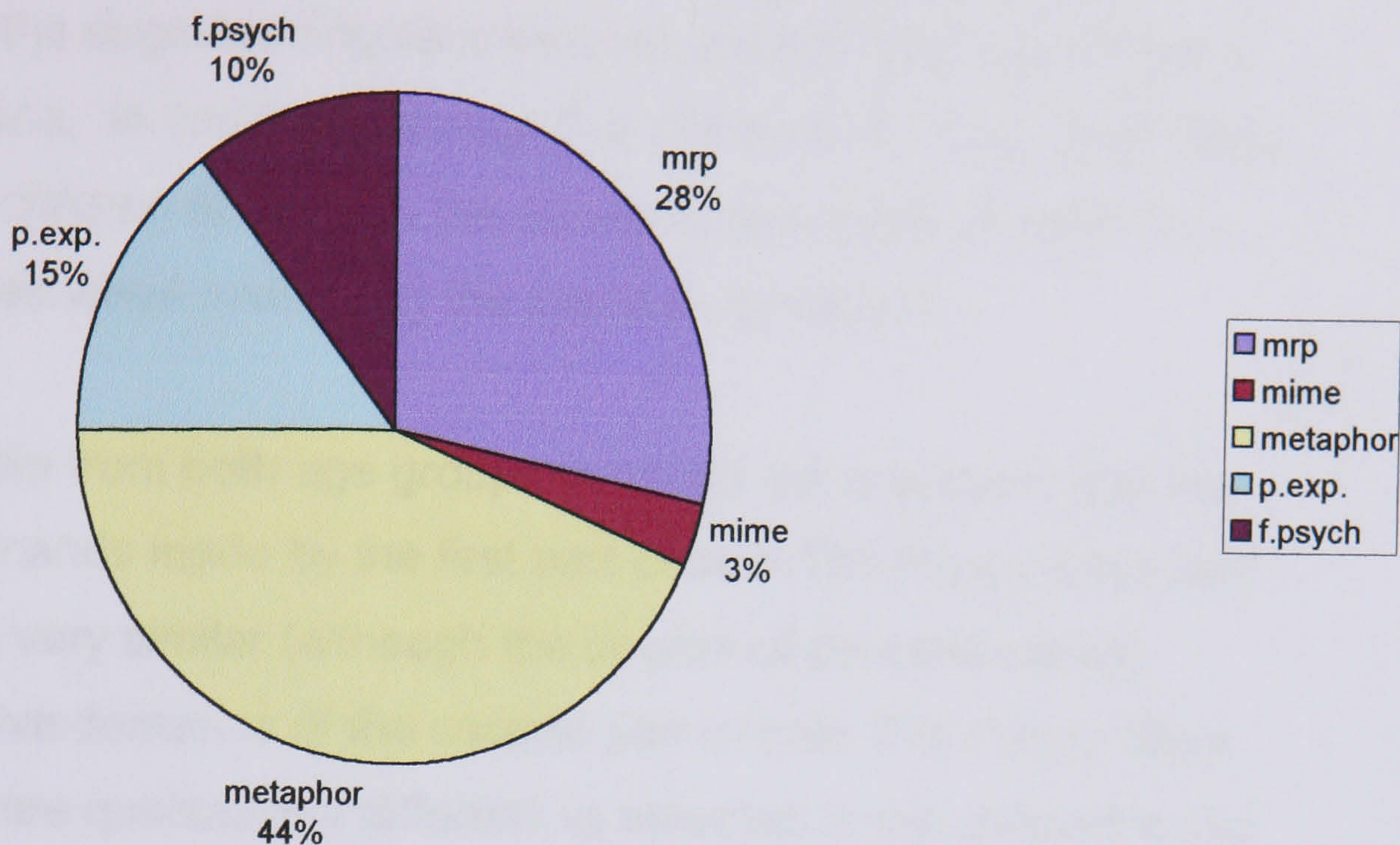


Pie chart 11. 6
Percentage of devices used by children aged 10 - 11 years in response to part 1 of *The Twins Story*

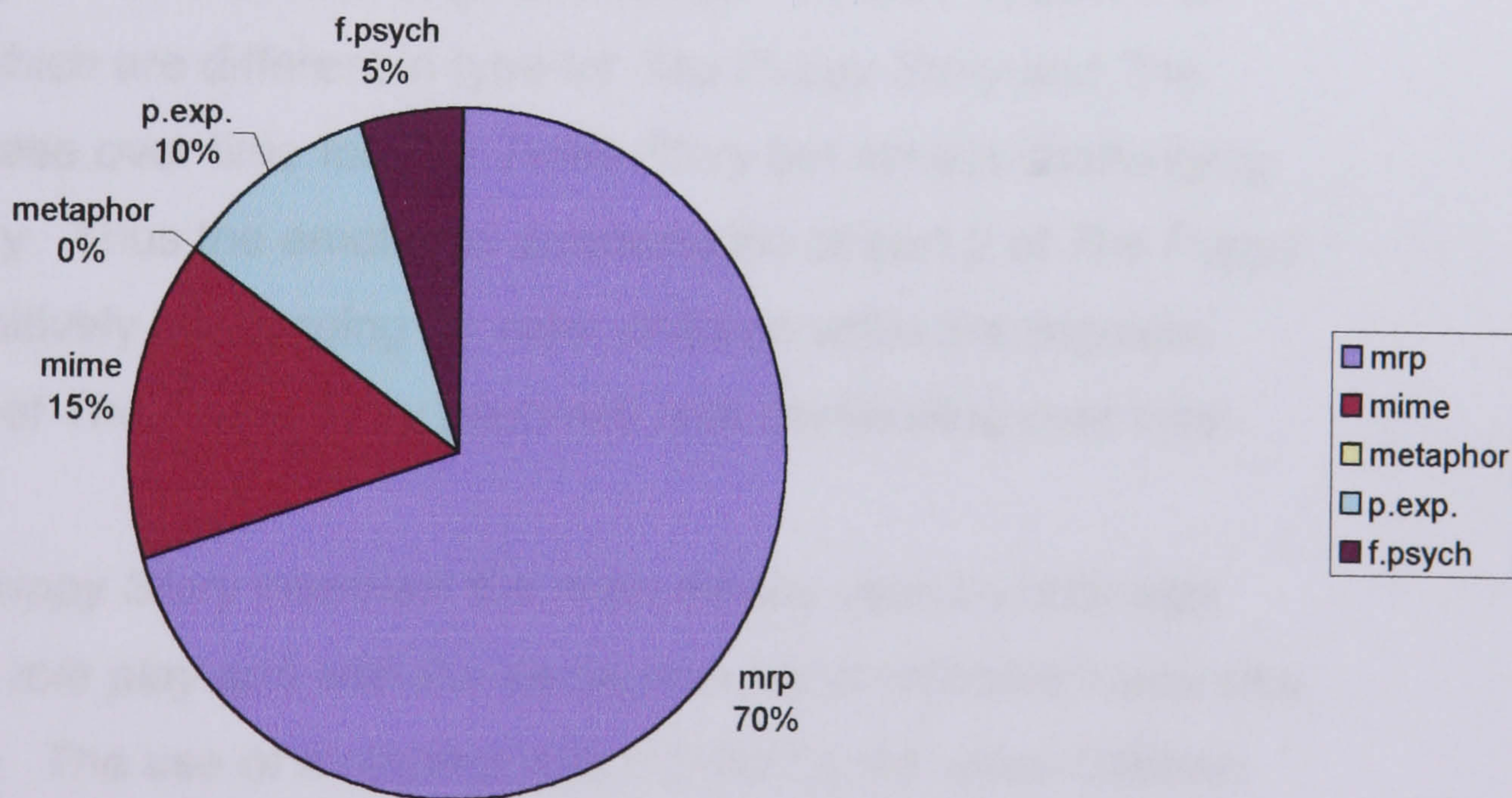


As for the younger subjects (see page 224) comparison of **Pie Charts 11.5** and **11.6** shows the similarity in the types of devices most frequently used by the older subjects in response to part 1 of both *The Puppy Story* and *The Twins Story*.

Pie chart 11.7
Percentage of devices used by children aged 10 - 11 years in response to part 2 of *The Puppy Story*



Pie chart 11.8
Percentage of devices used by children aged 10 - 11 years in response to part 2 of *The Twins Story*



As for the younger subjects (see page 225 and 226) comparison of **Pie Charts 11.7 and 11.8** shows the difference in the types of devices used most frequently by subjects in response to part 2 of *The Puppy Story* (metaphor) and *The Twins Story* (mental role play).

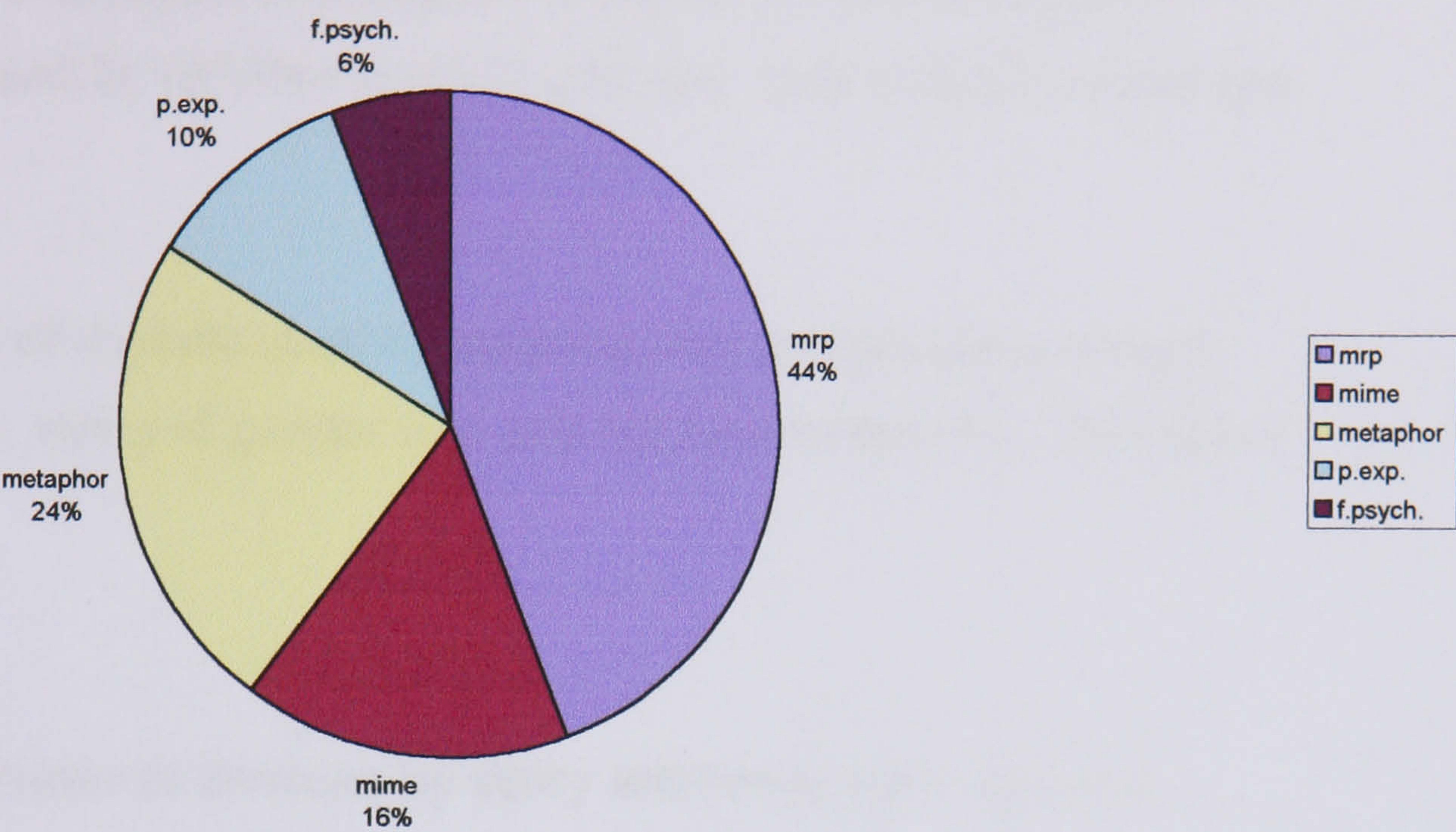
Comparison of the **Bar charts 11. 2** page 223 (younger children) and **11. 4** page 228 (older children) suggests that the second part of *The Puppy Story* remains cognitively demanding for the older children as measured by the number and type of the cognitive-linguistic devices used in their responses to the interview questions. In contrast the cognitive demands of *The Twins Story* decreases for older children as seen in the decreasing number of cognitive-linguistic devices used when answering the interview questions.

In conclusion, the data from both age groups supports the argument that the type of cognitive demands made by the first part of both *The Puppy Story* and *The Twins Story* are very similar (although the degree of demand varies). However, the cognitive demands of the second part of both *The Puppy Story* and *The Twin Story* are qualitatively different as reflected in the children's use of different cognitive-linguistic devices in their expressive language.

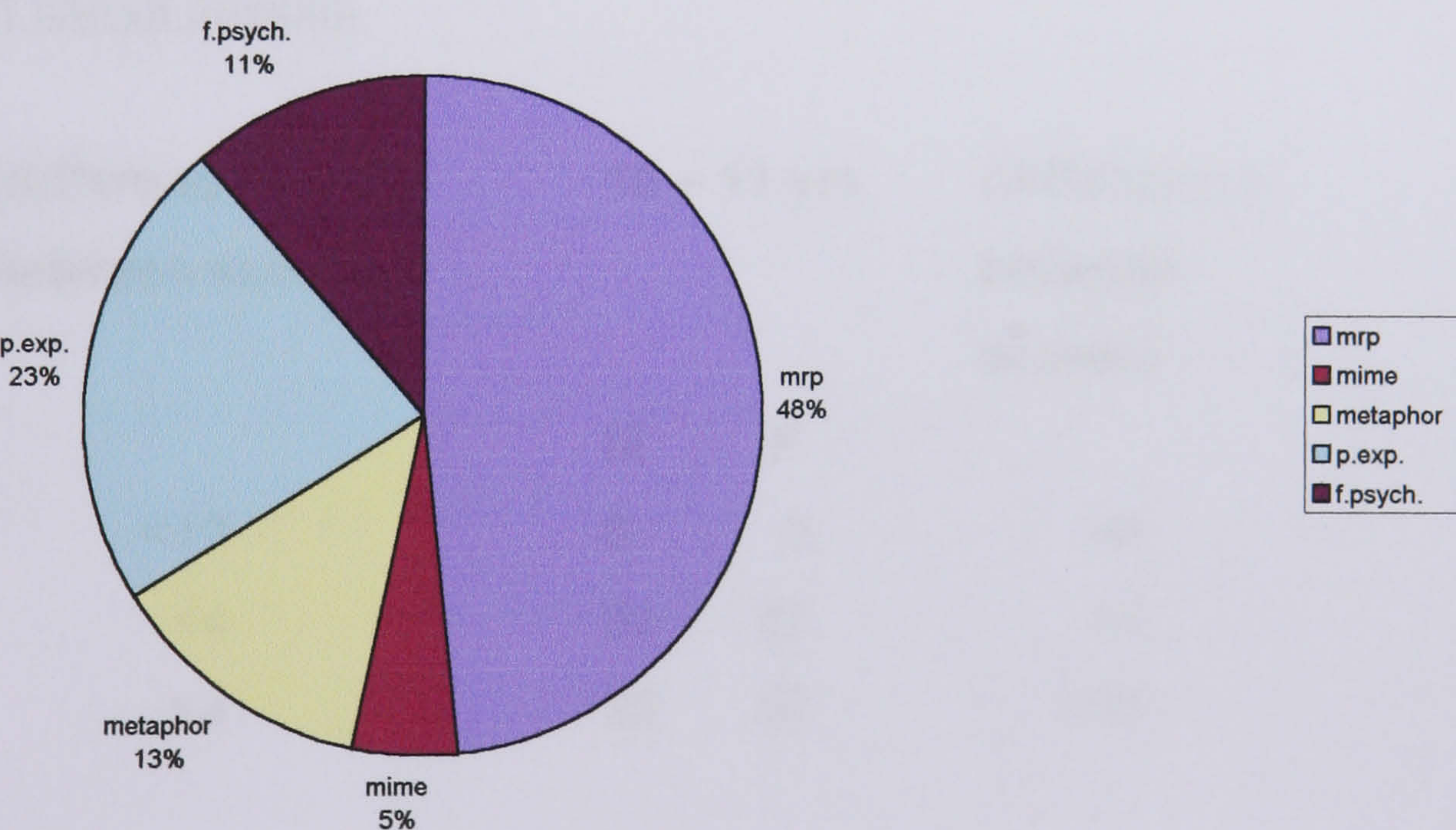
In addition, while the type of cognitive demands made by part 1 of both stories are the same for the younger as the older children, these demands become less challenging over time for *The Puppy Story* but remain relatively constant for *The Twins Story*. In contrast the cognitive demands made by part 2 of both stories (and which are different in type for *The Puppy Story* and *The Twins Story*) decrease over time for *The Twins Story* but remain challenging for *The Puppy Story*. Thus the emotional ambivalence of part 2 of *The Puppy Story* remains cognitively challenging for older children while the linguistic ambiguity in part 2 of *The Twins Story* becomes less demanding over time.

For part 3 of *The Puppy Story* interview the main device used by both age groups was *mental role play* and with the same number of recorded instances for each group (30). The use of *metaphor* was halved for the older children (16 instances vs. 8) while the use of *personal experience* doubled for the older children (7 instances vs. 14). See **Pie charts 11.9** and **11. 10** page 233. Part 3 of *The Puppy Story* interview cannot be compared to *The Twins Story* which consists of only two interview parts.

Pie chart 11.9
Percentage of devices used by children aged 7 - 8 years in response to part 3 of *The Puppy Story*



Pie chart 11.10
Percentage of devices used by children aged 10 - 11 years in response to part 3 of *The Puppy Story*



Pie charts 11.9 and 11. 10 showing children’s use of devices in response to part 3 of *The Puppy Story* interview at ages 7 – 8 years and 10 – 11 years. *Mental role play* was the main device used by both age groups. In comparison, the use of *mime* and *metaphor* decreased with age while that of *personal experience* and *folk psychology* increased.

Gender Differences in Use of Cognitive-linguistic devices

12. The next level of analysis investigated the total number of cognitive-linguistic devices used by children according to age, type of device used and gender.

Initially the number of devices used by subjects was grouped according to story interview part, age and gender (i.e. and not type of device). See below **Table 12.1**.

Devices (Total number of devices by story interview part, age and gender)

Table 12. 1

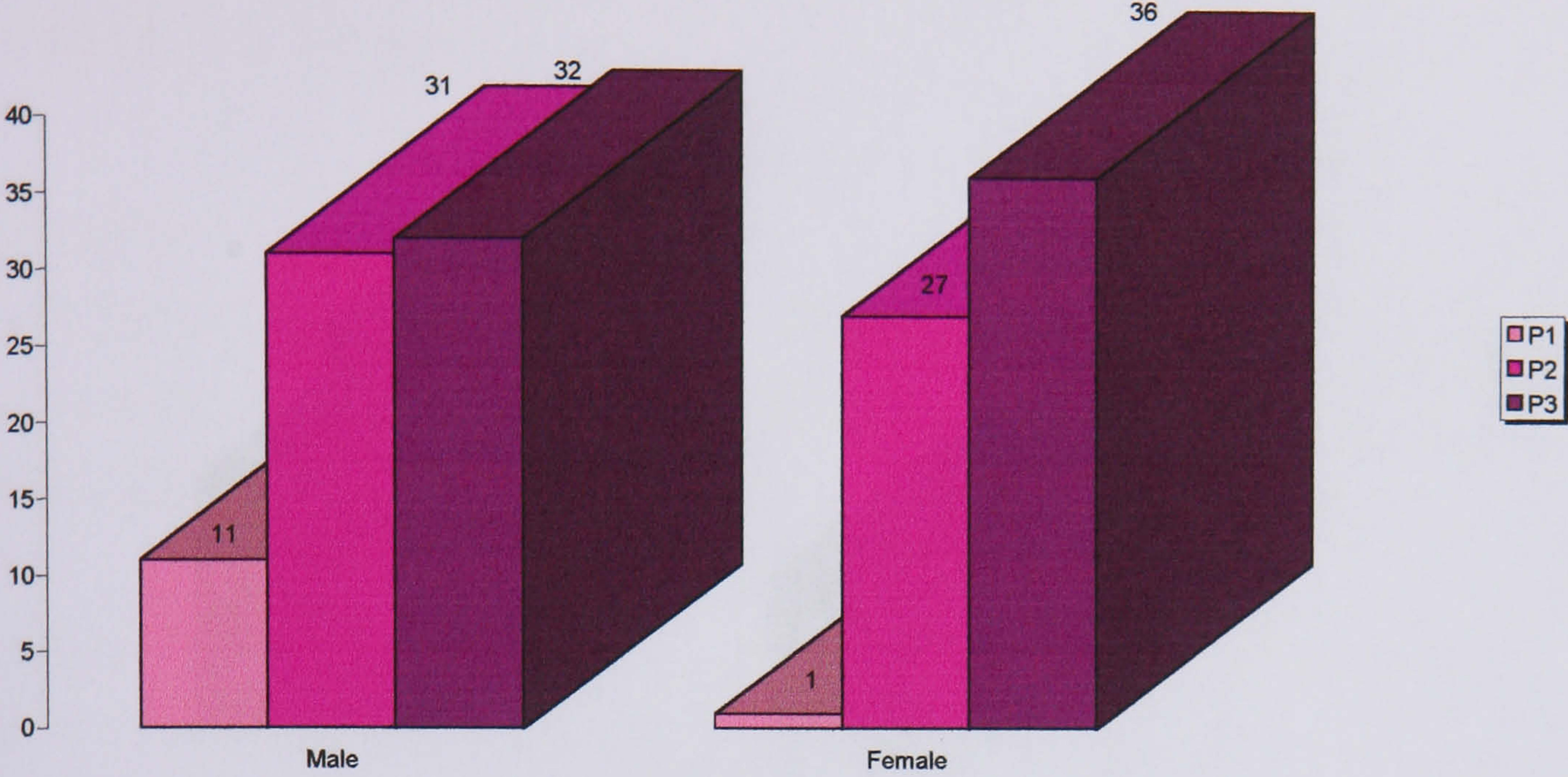
Gender differences in use of devices

7 – 8 yrs			(differences between scores)	10 – 11 yrs		(differences between scores)
	M	F		M	F	
P1	11	1	<10	6	2	<4
P2	31	27	<4	30	37	>7
P3	32	36	>4	36	26	<10
Tw1	16	10	<6	22	9	<13
Tw2	26	15	<11	16	4	<12

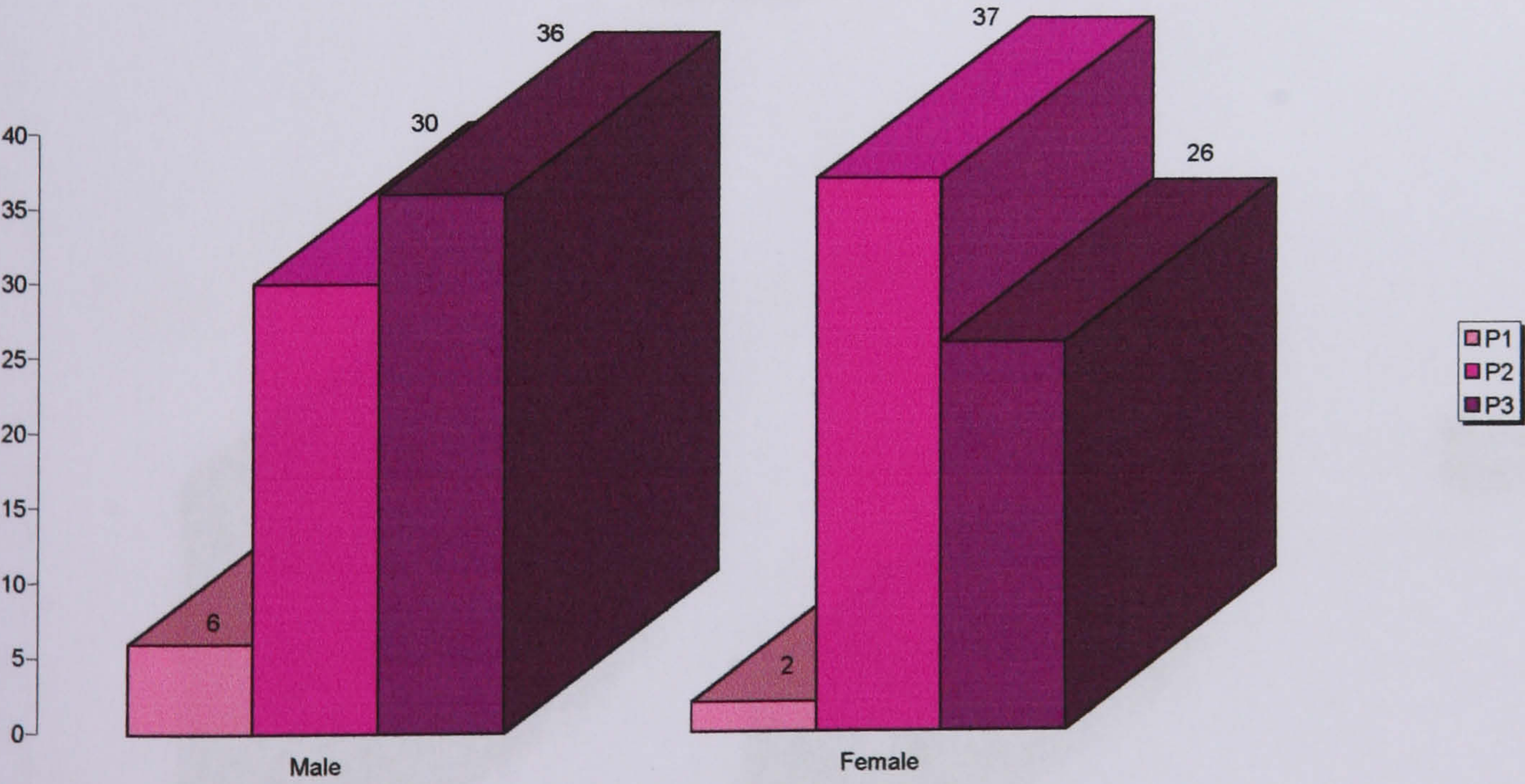
M = male; F = female. P1 = Part 1 of *The Puppy Story* interview; P2 = Part 2 of *The Puppy Story* interview; P3 = Part 3 of *The Puppy Story* interview; Tw1 = Part 1 of *The Twins Story* interview; Tw2 = Part 2 of *The Twins Story* interview.

Table 12. 1 shows that at age 7 – 8 years, female subjects used fewer devices than male subjects when responding to questions relating to P1, and Tw 1 and Tw 2. The number of devices used in response to P2 and P3, which related to the most emotionally complex information, remained similar for both sexes. By age 10 – 11 years the older female subjects used fewer devices for P3, Tw1 and Tw2 than their male counterparts. By age 10 – 11 years, male subjects' use of devices for P1 has decreased by 54.55%, putting them more in line with the female subjects, although the total for males is still higher. Comparing gender differences in scores for just the older age group shows an increasing trend towards selectiveness in the female subjects' use of devices. Females' use of devices is clustered around P2 and P3 with far fewer recorded instances for P1 (2), Tw1 (9) and Tw 2 (4). In comparison, apart from the decrease for the male subject's use of devices in P1 (11 at age 7-8yrs and 6 at age 10-11yrs) boys use of devices stays relatively constant for all story parts, for both stories. There is a decrease over time for male subjects' in Tw2 (26 vs. 16), although this continues to be higher than the number for the older girls (15 vs. 4). For the older girls it is P2 and P3 only, (which related specifically to the elicitation of emotionally complex information) which continued to require the use of the cognitive-linguistic devices. For the older boys P2, P3 and Tw1 continued to require the use of devices and while the number of devices used for Tw2 decreased, it was still at a similar level to that used by the younger girls (15 for 7-8 yr old girls vs. 16 for 10 – 11 yr old boys). See below, **Bar Charts 12.1 – 12.4**.

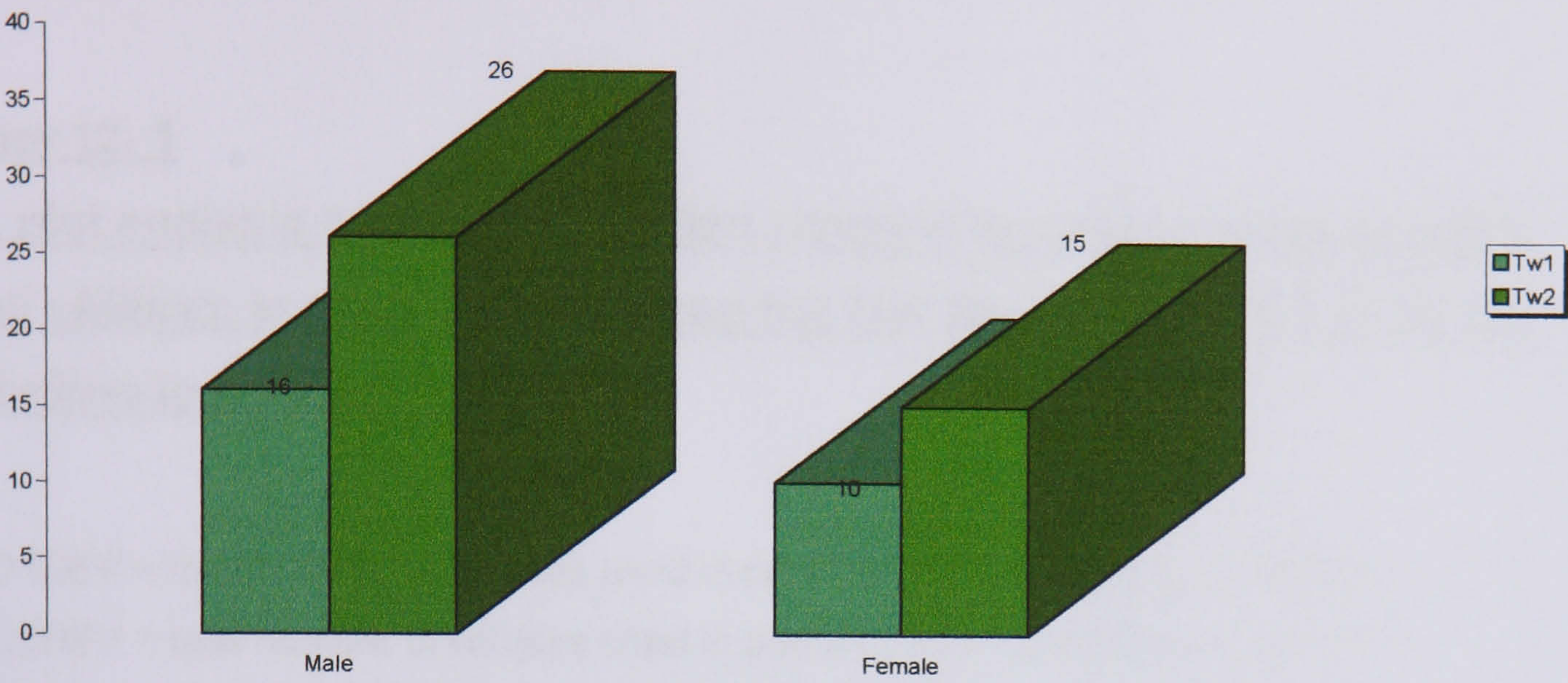
Bar Chart 12.1
Comparison of number of devices used by boys and girls aged 7 - 8 years in parts 1, 2 and 3 of *The Puppy Story*



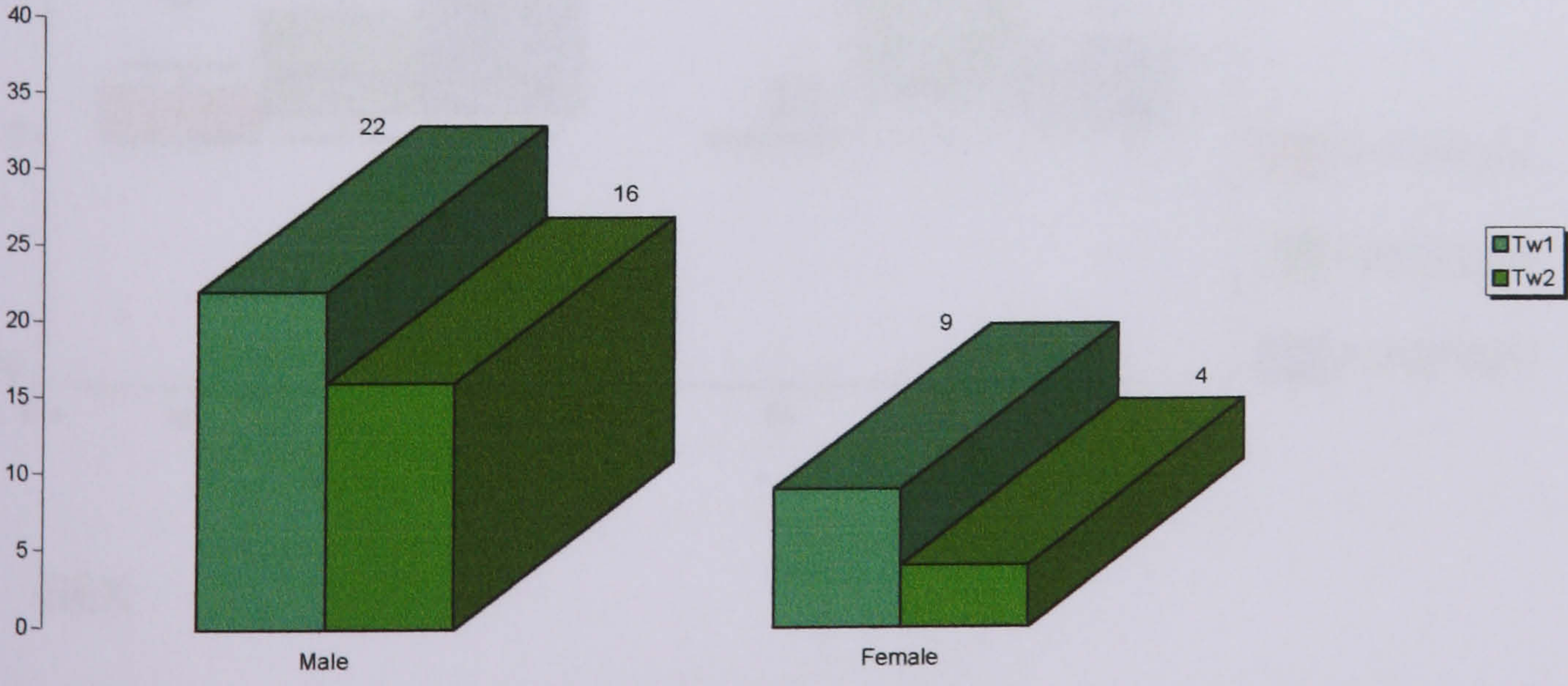
Bar Chart 12.2
Comparison of number of devices used by boys and girls aged 10 - 11 years in parts 1, 2 and 3 of *The Puppy Story*



Bar Chart 12.3
Comparison of number of devices used by boys and girls aged 7 - 8 years in parts 1 and 2 of *The Twins Story*



Bar Chart 12.4
Comparison of number of devices used by boys and girls aged 10 - 11 years in parts 1 and 2 of *The Twins Story*



Box plot analysis, comparing median scores, was also used to look at gender differences in the number of devices used per interview part. This type of analysis was used as it would be sensitive to any clustering of scores as suggested by the raw data.

Figure 12. 1
Box plot analysis comparing median range of scores for devices used by all children in each interview part for *The Puppy Story* (P1, P2 & P3) according to gender

P1TOTDEV = total number of devices used in part 1 of *The Puppy Story* interview
P2TOTDEV = total number of devices used in part 2 of *The Puppy Story* interview
P3TOTDEV = total number of devices used in part 3 of *The Puppy Story* interview

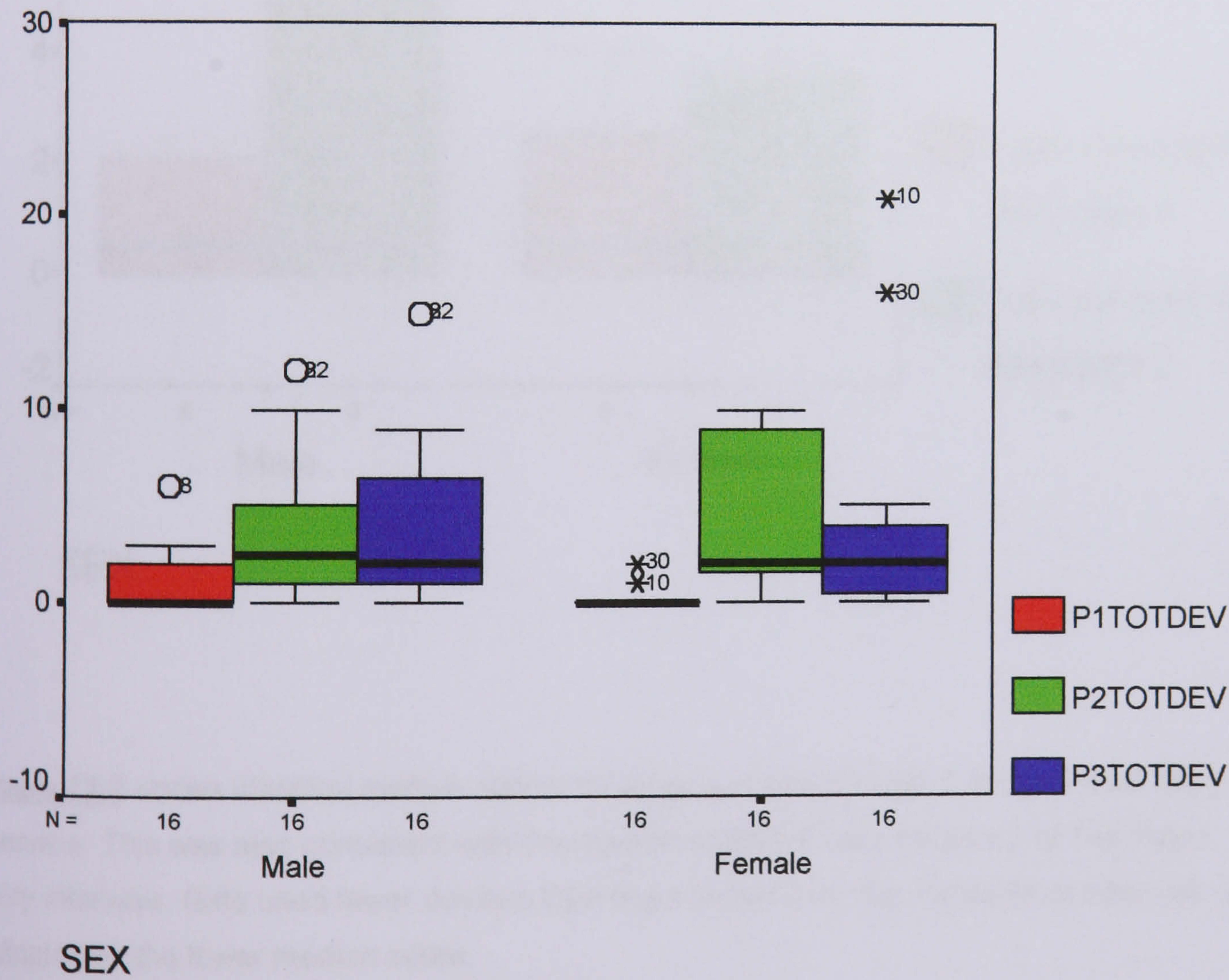


Figure 12.1 shows how the girls' use of devices was clustered mainly in response to part 2 and part 3 of *The Puppy Story* interview which related to the most emotionally complex information. For the girls, median scores were the same in parts 2 and 3. Boys showed an increased use of devices in parts 2 and 3 but use of devices was generally more spread out over all three story interview parts.

Figure 12. 2

Box plot analysis comparing median range of scores for all devices used by younger children in each interview part for *The Twins Story* (Tw1 & Tw2) according to gender

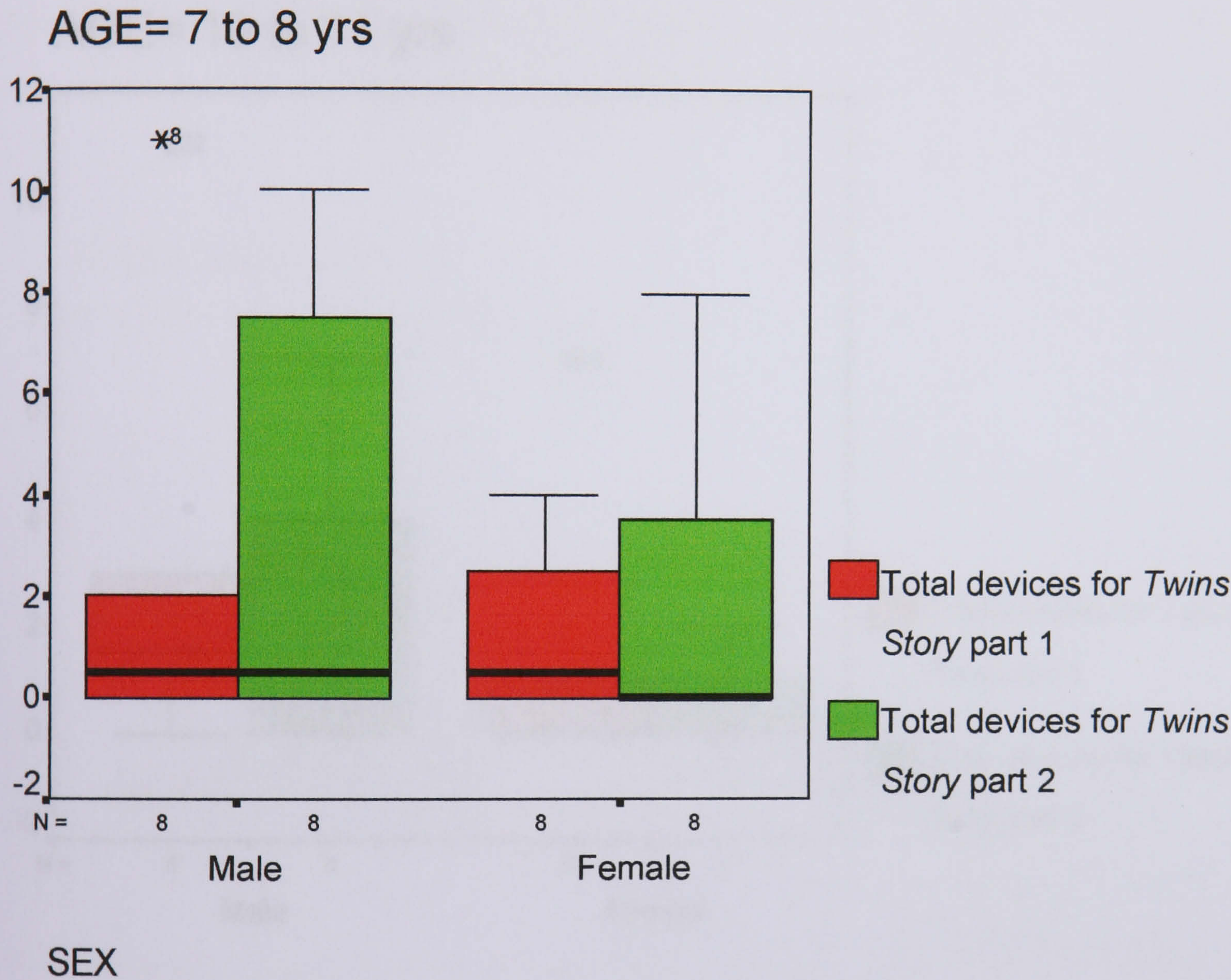


Figure 12.2 shows identical median scores for boys and girls for part 1 of *The Twins Story* interview. This was also consistent with the median score for boys for part 2 of *The Twins Story* interview. Girls used fewer devices than boys in part 2 of *The Twins Story* interview as indicated by the lower median score.

Figure 12. 3
Box plot analysis comparing median range of scores for all devices
used by older children in each interview part for *The Twins Story* (Tw1 &
Tw2) according to gender

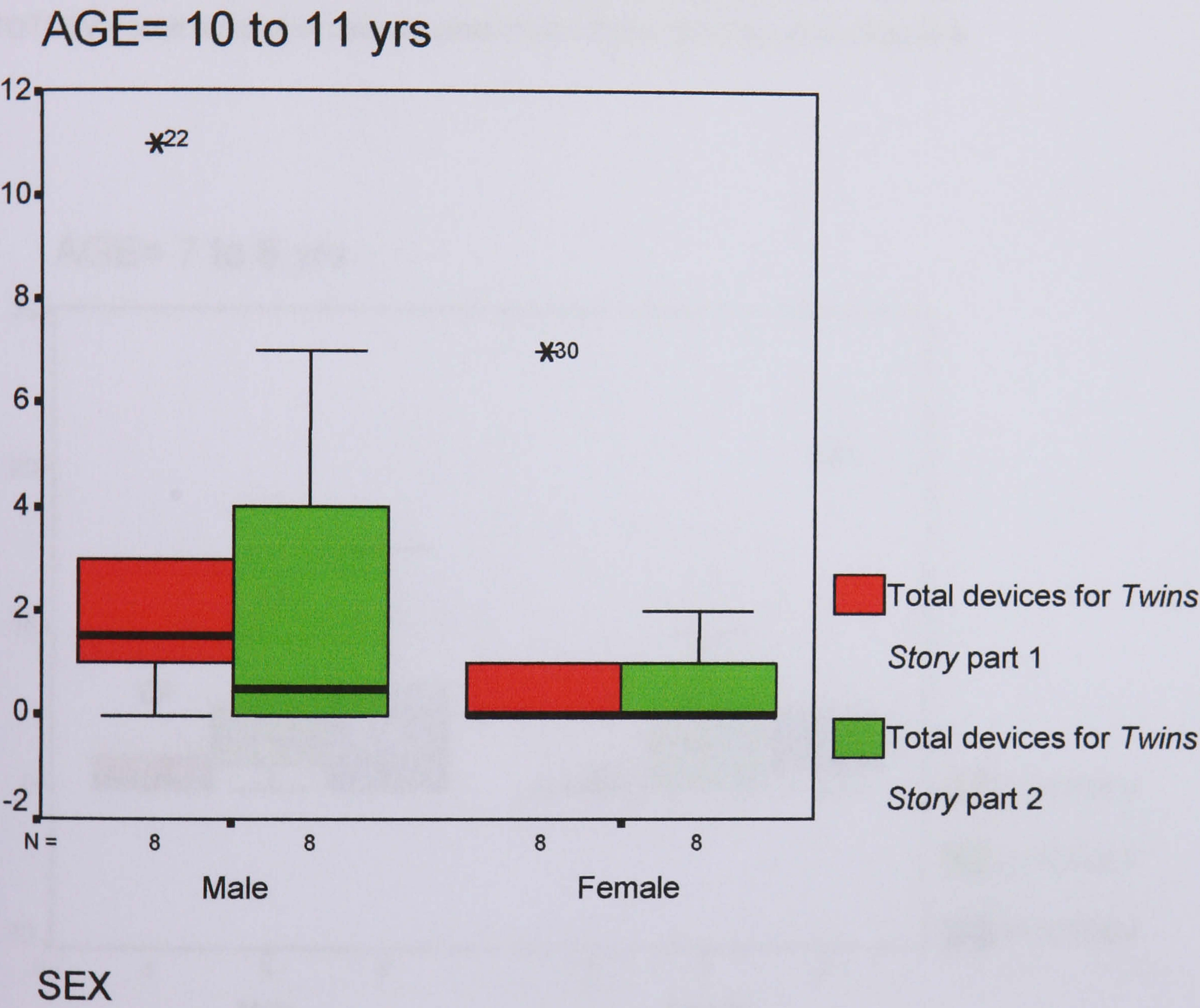


Figure 12.3 shows the similar low number of devices used by girls in both parts of *The Twins Story* interview (median scores are identical). Boys used more devices than girls in both story interview parts and with a higher number of recorded devices used in part 1 than part 2 of *The Twins Story* interview.

Figure 12. 4
Box plot analysis comparing median range for devices used by younger (7 – 8 yrs) children in each interview part for *The Puppy Story* (P1, P2 & P3) according to gender

P1TOTDEV = total number of devices used in part 1 of *The Puppy Story* interview
P2TOTDEV = total number of devices used in part 2 of *The Puppy Story* interview
P3TOTDEV = total number of devices used in part 3 of *The Puppy Story* interview

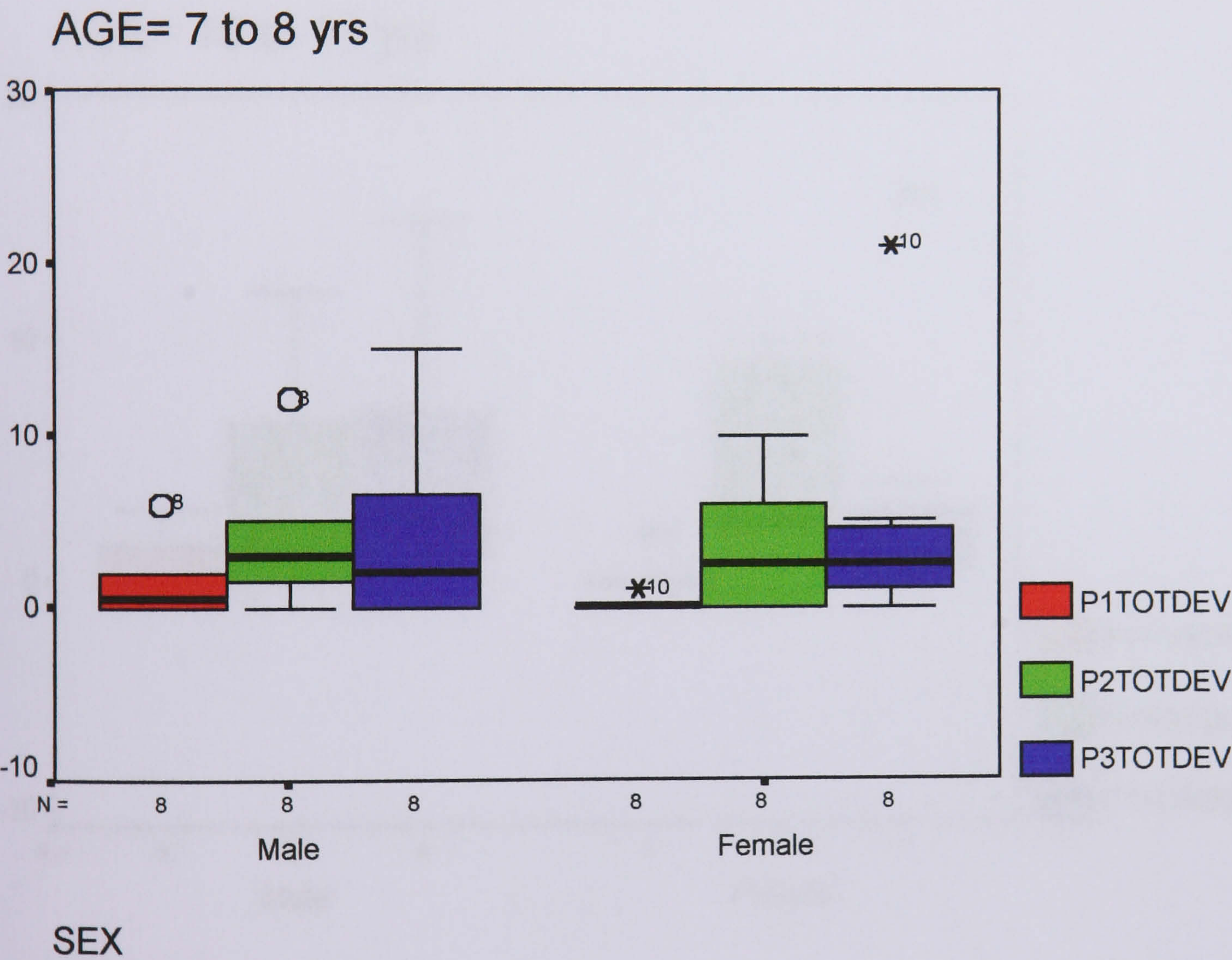


Figure 12.4 shows the clustering of the girls' use of devices in parts 2 and 3 of *The Puppy Story* interview (and which have identical median scores). Boys' use of devices, while more pronounced in parts 2 and 3, were spread out over all three parts of *The Puppy Story* interview. Boys' use of devices also showed more variation in their median scores.

Figure 12. 5
Box plot analysis comparing median range for devices used by older children (10 – 11yrs) in each interview part for *The Puppy Story* (P1, P2 & P3) according to gender

P1TOTDEV = total number of devices used in part 1 of *The Puppy Story* interview
P2TOTDEV = total number of devices used in part 2 of *The Puppy Story* interview
P3TOTDEV = total number of devices used in part 3 of *The Puppy Story* interview

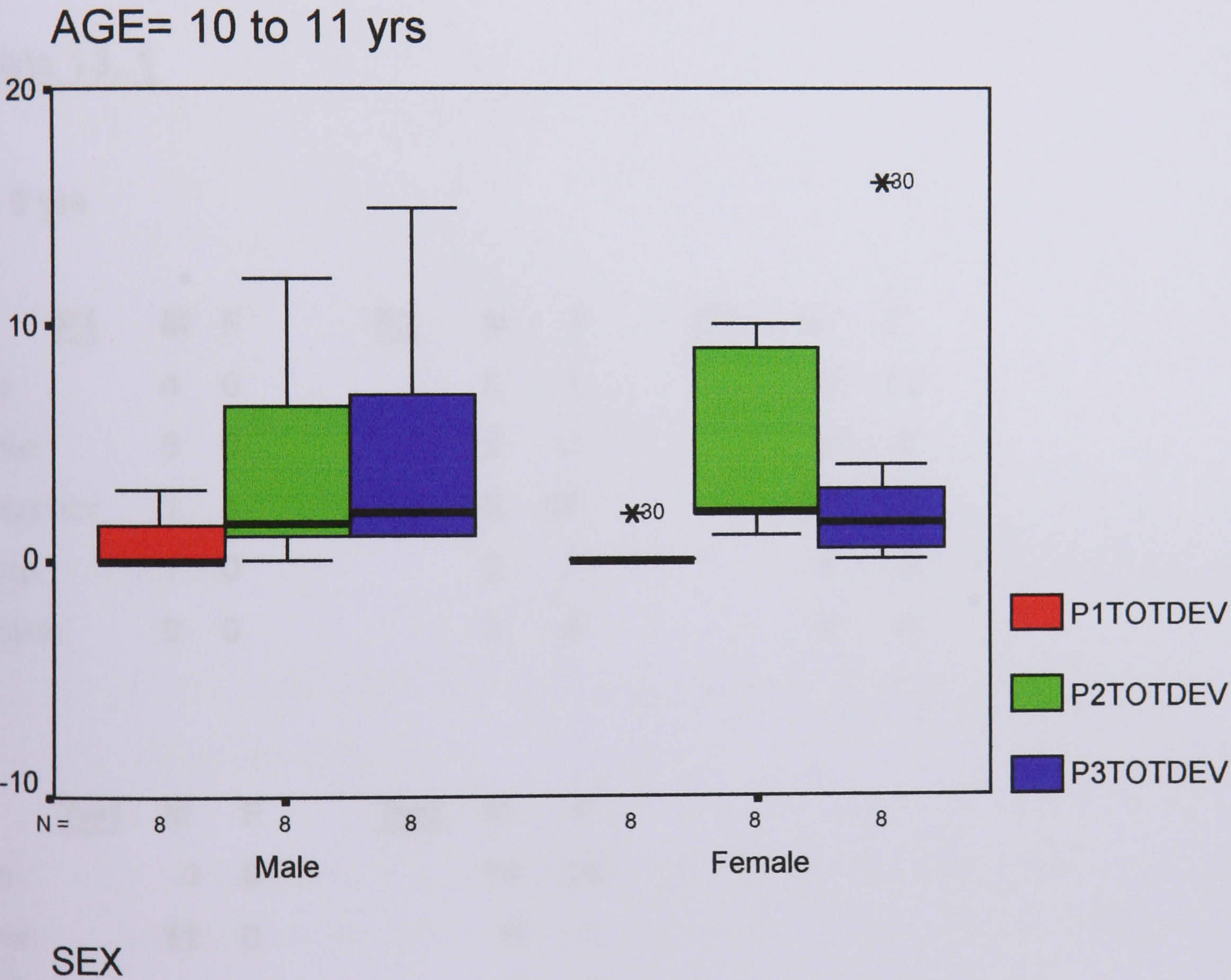


Figure 12.5 shows the spread of the boys' use of devices across all three story interview parts in contrast to the girls' use which is clustered around parts 2 and 3. At this age, the older boys' use of devices in parts 2 and 3 was similar in terms of median scores, although there were slightly more devices used in part 3 of the interview. In contrast, the girls' data showed a higher median score for part 2 relative to part 3 (showing a greater use of devices in part 2 than in part 3).

13. Further investigation was then conducted looking at the total number of cognitive-linguistic devices used by children according to age, gender and type of device.

Devices – Tables 13.1 and 13.2 show the total number of devices by story interview part, type, age and gender) **P1** = Part 1 of *The Puppy Story* interview; **P2** = Part 2 of *The Puppy Story* interview; **P3** = Part 3 of *The Puppy Story* interview; **Tw1** = Part 1 of *The Twins Story* interview; **Tw2** = Part 2 of *The Twins Story* interview.

Numbers in bold highlight the type of device used most frequently according to age, gender and story interview part:

Table 13. 1

7 – 8 yrs

	<u>P1</u>	M	F		<u>P2</u>	M	F		<u>P3</u>	M	F
mrp		4	0			8	5			9	21
mime		5	0			5	0			9	2
metaphor		1	1			13	17			10	6
p.exp.		1	0			2	1			4	3
f.psych.		0	0			3	4			0	4

	<u>Tw1</u>	M	F		<u>Tw2</u>	M	F
mrp		3	8			14	14
mime		11	0			6	1
metaphor		2	1			2	0
p.exp.		0	1			4	0
f.psych.		0	0			0	0

Table 13. 2

10 – 11yrs

	<u>P1</u>	M	F		<u>P2</u>	M	F		<u>P3</u>	M	F
mrp		4	1			11	8			14	16
mime		1	1			2	0			3	0
metaphor		0	0			9	20			4	4
p.exp.		1	0			5	5			11	3
f.psych.		0	0			3	4			4	3

	<u>Tw1</u>	M	F		<u>Tw2</u>	M	F
mrp		12	5			11	3
mime		7	2			3	0
metaphor		0	0			0	0
p.exp.		2	2			1	1
f.psych.		1	0			1	0

The Puppy Story

Part 1: contains simple (single valence), unambiguous emotional information relating to primary emotion (love).

Few devices were used in response to this part of the story at either age. Boys had (relatively) more use of devices, specifically the use of *mental role play* and *mime* at age 7 – 8 years. Older boys (10 – 11 years of age) continued to show use of *mental role play* but the use of *mime* had diminished and was now equal to that of the girls (only 1 recorded instance for either sex). Overall, boys of both age groups used more devices than their female peers. *Mental role play* was the device which continued to be used most frequently by the older male subjects. See **Bar Charts 13.1** and **13.2** page 247.

Part 2: contains complex, ambivalent emotions relating to primary emotions (love/hate)

At age 7 – 8 years both male and female subjects used mainly *metaphor* when answering questions relating to this part of *The Puppy Story* (13 for boys and 17 for girls). Older girls (10 – 11 years of age) continued to use mainly *metaphor* (20) but for older boys the use of devices was now split between *metaphor* (9) and *mental role play* (11). (*Mental role play* was the second most frequently used device for younger boys and girls and the older girls). See **Bar Charts 13. 3 and 13.4** page 248.

Part 3: this part of the interview protocol contains questions relating to emotionally complex information about what causes the emotions in *The Puppy Story* to change over time.

Younger girls (7 – 8 years of age) used mainly *mental role play* (21) in their response to questions. Younger boys' responses were split between *mental role play* (9), *mime* (9) and *metaphor* (10). Older girls (10 – 11 years of age) continued to use mainly *mental role play* (16) while older boys responses were now split between *mental role play* (14) and *personal experience* (11). See **Bar Charts 13.5 and 13.6** page 249.

The Twins Story

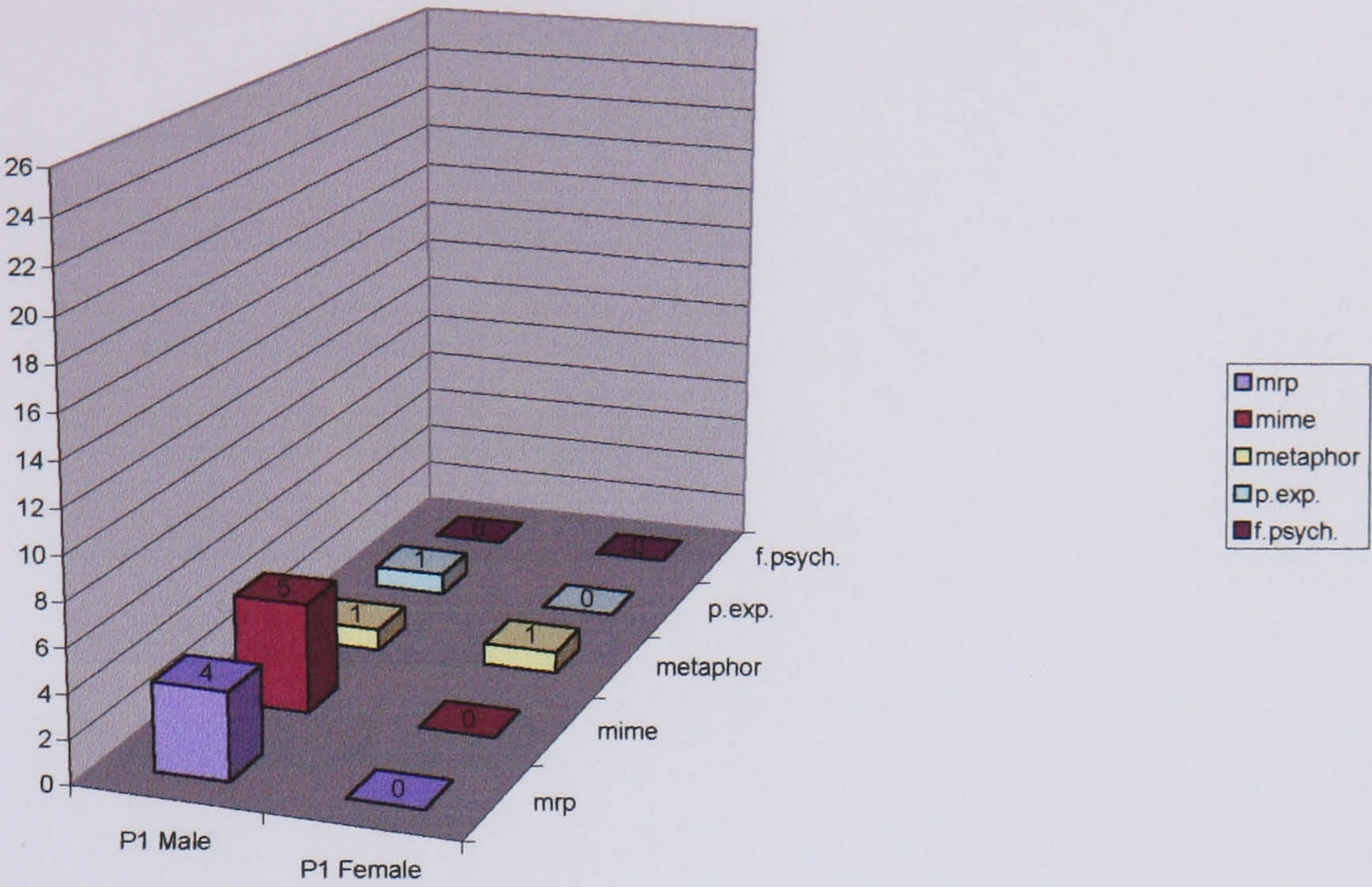
Part 1: contains non ambiguous linguistic structures. Also contains information relating to complex emotions (anxiety) within a complex temporal narrative.

Younger boys (7 – 8 years of age) used mainly *mime* (11) in their responses to questions. Younger girls used mainly *mental role play* (8) in their responses. Older boys (10 – 11 years of age) used mainly *mental role play* (12). Their use of mime had dropped to second place (7). Older girls' most frequently used device was *mental role play* but this had dropped to only 5 recorded instances. See **Bar Charts 13.7 and 13.8** page 250.

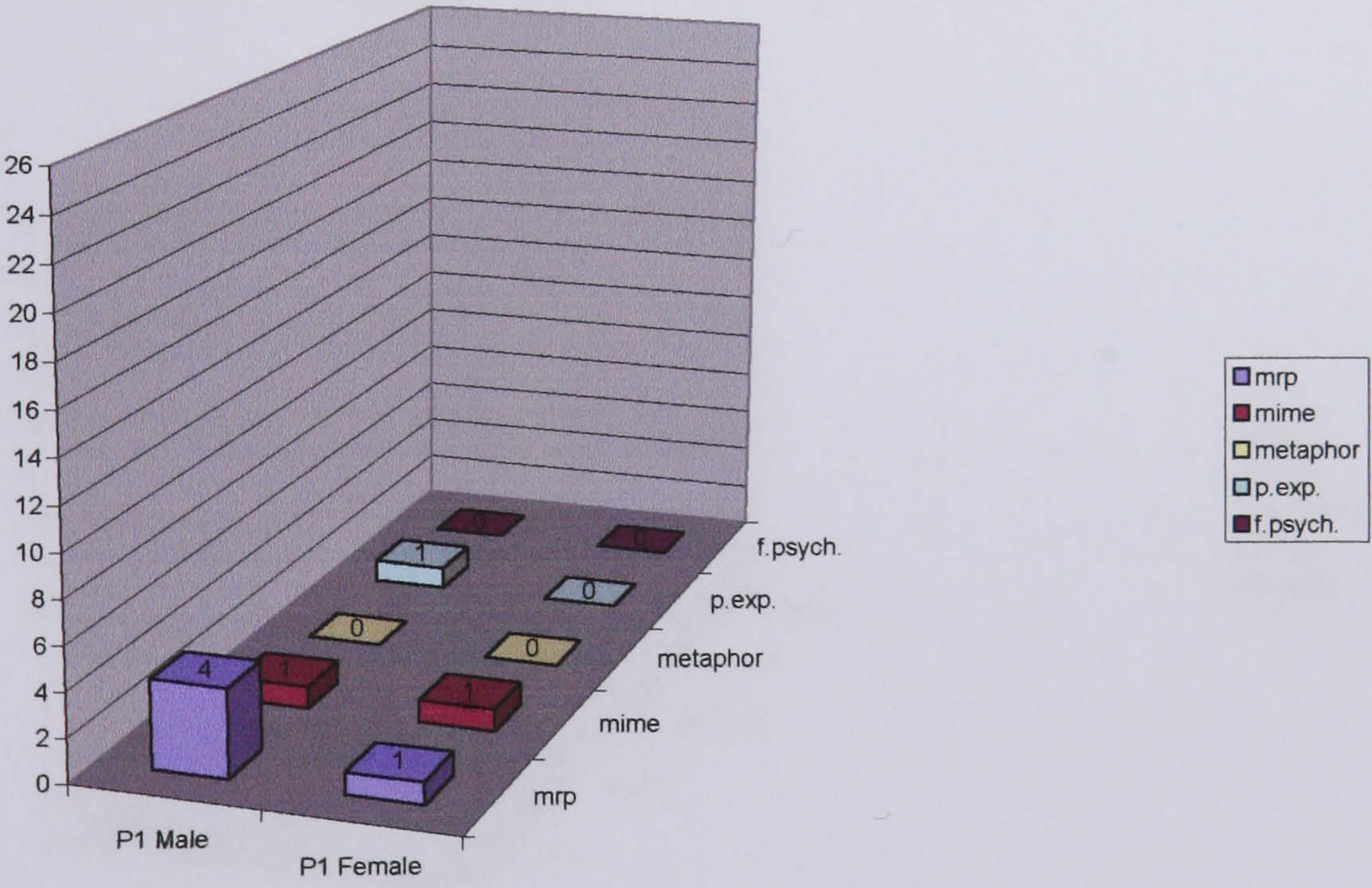
Part 2: contains linguistically complex structures (linguistic ambiguity) but unambiguous emotions within a simple temporal narrative.

Younger boys and girls (7 – 8 years of age) both used mainly *mental role play* in their responses (14 recorded instances for both boys and girls). Older boys (10 – 11 years of age) continued to use mainly *mental role play* (11). The older girls' use of *mental role play* had now dropped to a low 3 recorded instances. See **Bar Charts 13.9 and 13.10** page 251.

Bar Chart 13.1
Comparison of number and type of devices used by boys and girls aged 7 - 8 years in part 1 of *The Puppy Story*

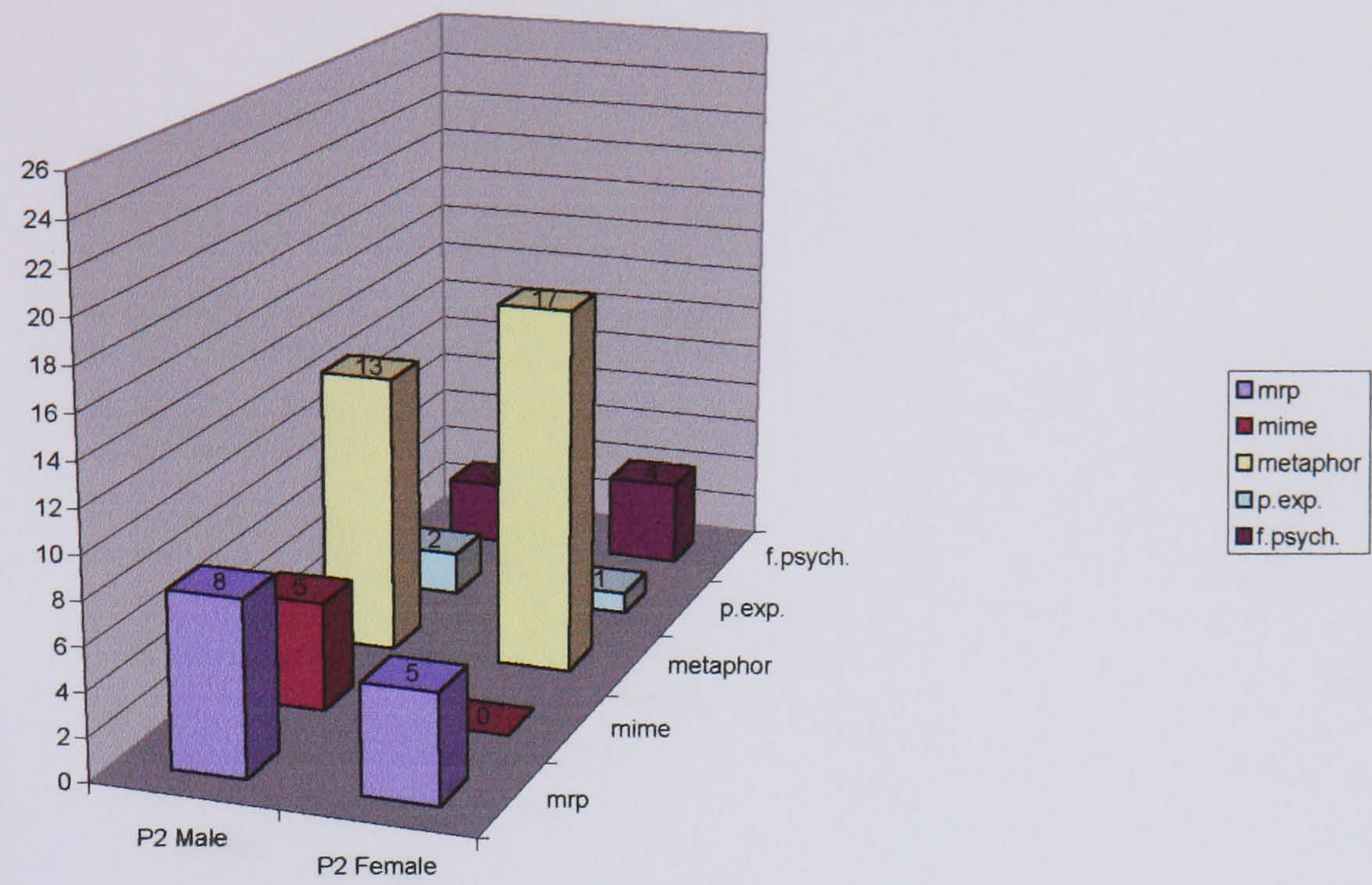


Bar Chart 13.2
Comparison of number and type of devices used by boys and girls aged 10 - 11 years in part 1 of *The Puppy Story*

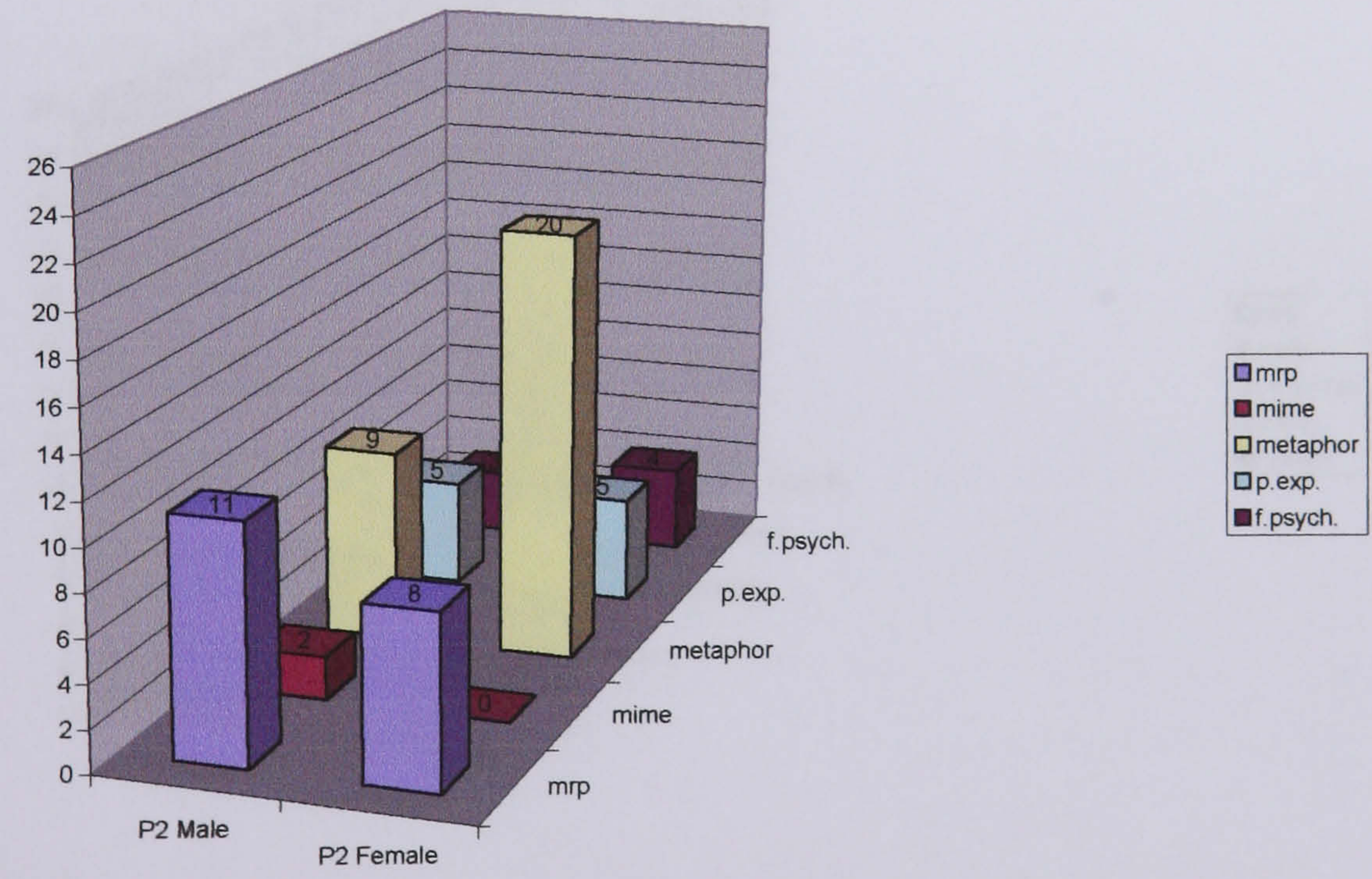


Comparison of **Bar Charts 13.1** and **13.2** shows that both the younger and older female subjects used few devices when responding to part 1 of *The Puppy Story*. Younger male subjects used *mental role play* and *mime* when responding to interview questions relating to part 1 of *The Puppy Story*. By 10 – 11 years of age the boys' use of *mime* had decreased to the same level as the female subjects. However, the older boys' use of *mental role play* continued at the same level as that of the younger boys.

Bar Chart 13.3
Comparison of number and type of devices used by boys and girls aged 7 - 8 years in part 2 of *The Puppy Story*

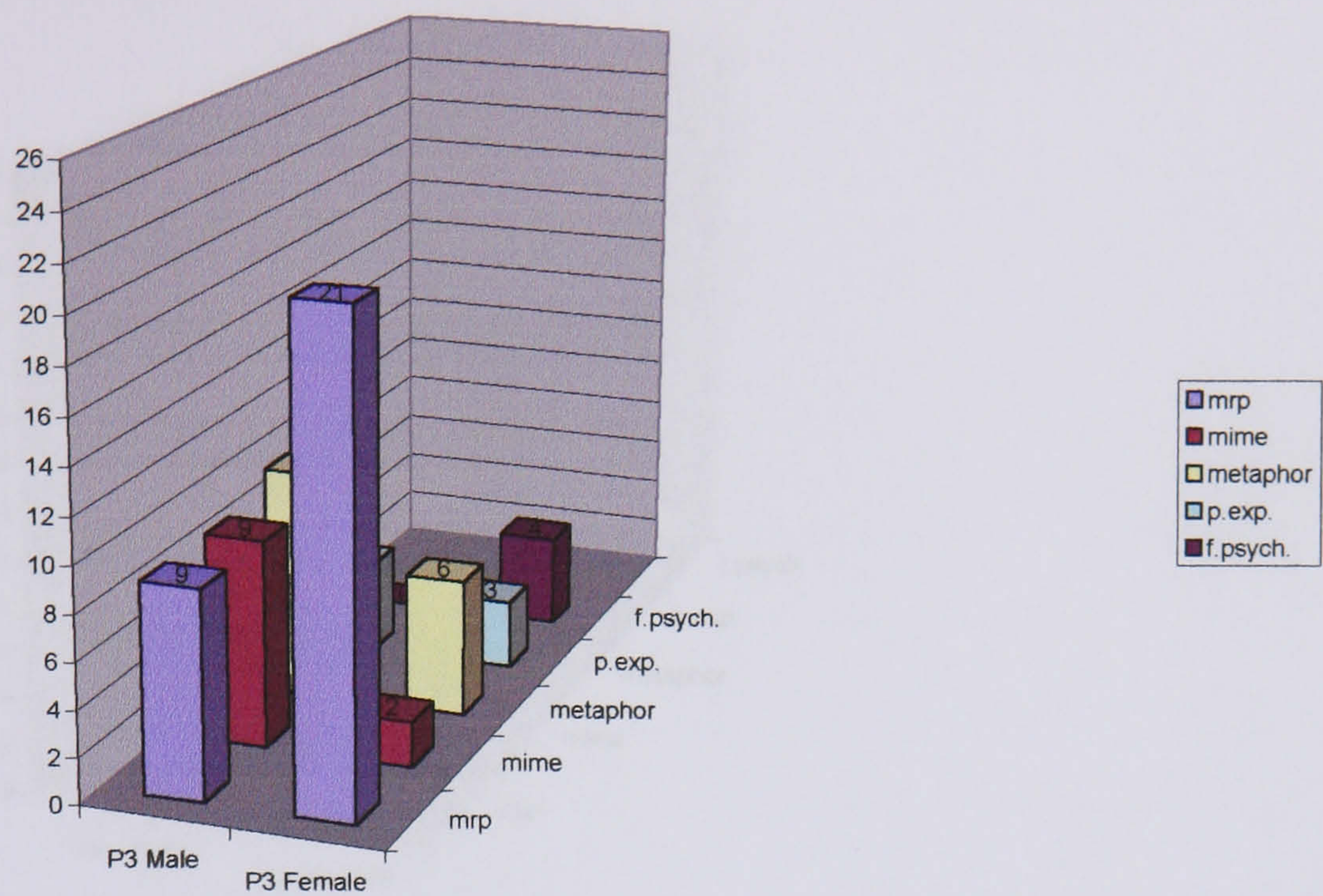


Bar Chart 13.4
Comparison of number and type of devices used by boys and girls aged 10 - 11 years in part 2 of *The Puppy Story*

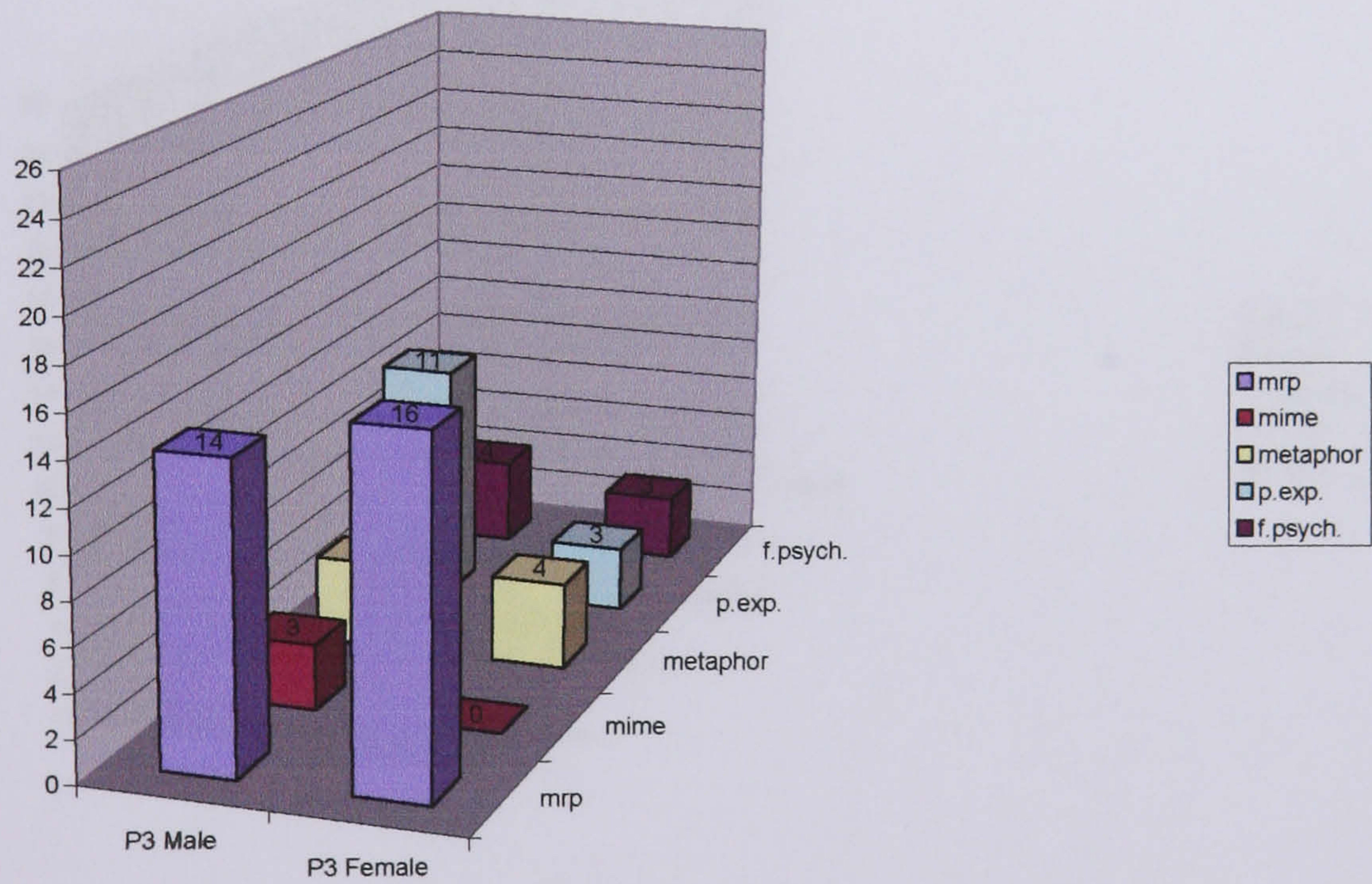


Comparison of **Bar Charts 13.3** and **13.4** shows a similar pattern in the type of devices used in response to part 2 of *The Puppy Story* by boys and girls in both age groups. However, both the younger and older girls used *metaphor* more than any other device. The older boys' use of devices remained spread between *mental role play*, *metaphor* and *personal experience*.

Bar Chart 13.5
Comparison of number and type of devices used by boys and girls aged 7 - 8 years in part 3 of *The Puppy Story*

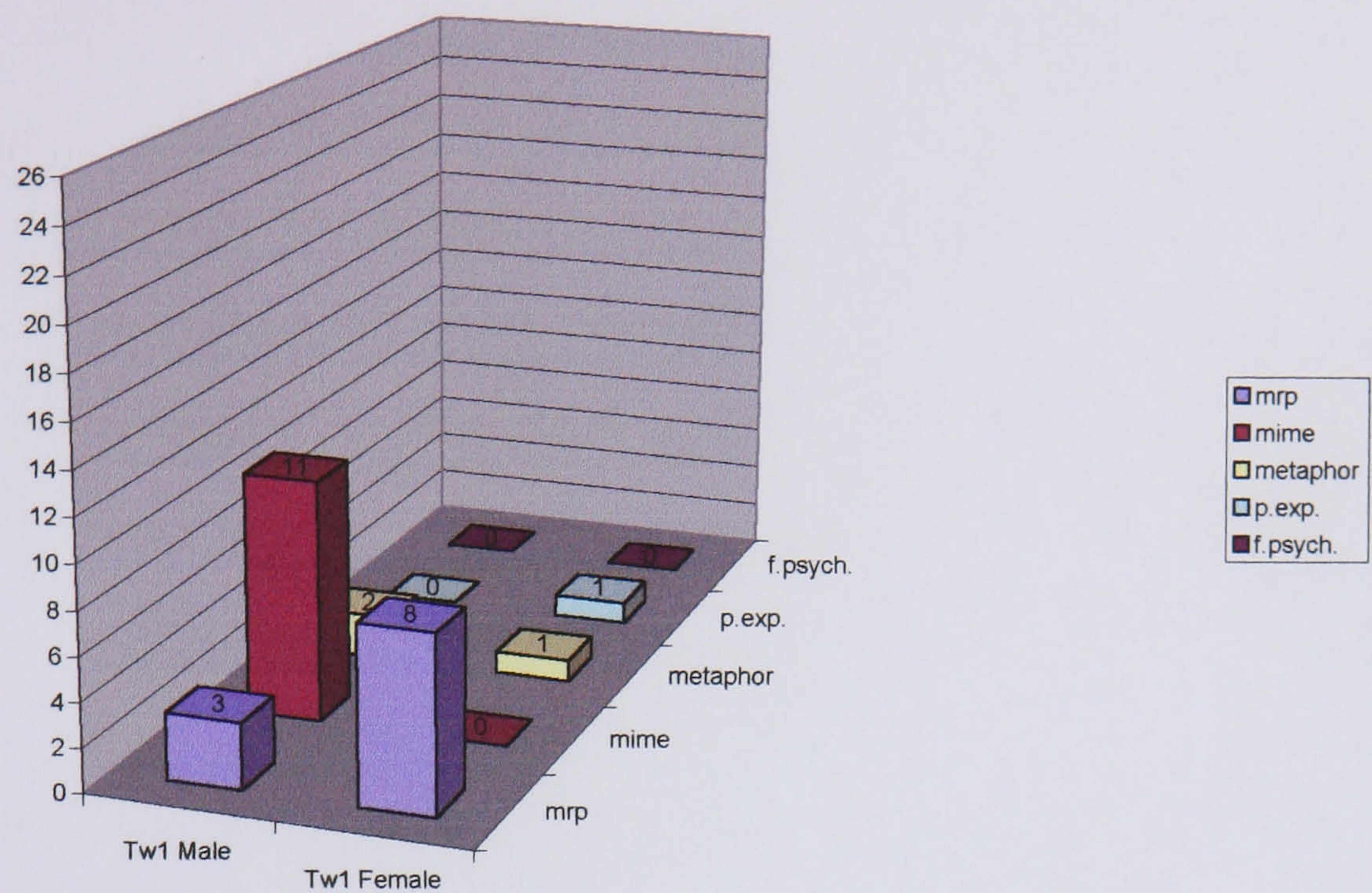


Bar Chart 13.6
Comparison of number and type of devices used by boys and girls aged 10 - 11 years in part 3 of *The Puppy Story*

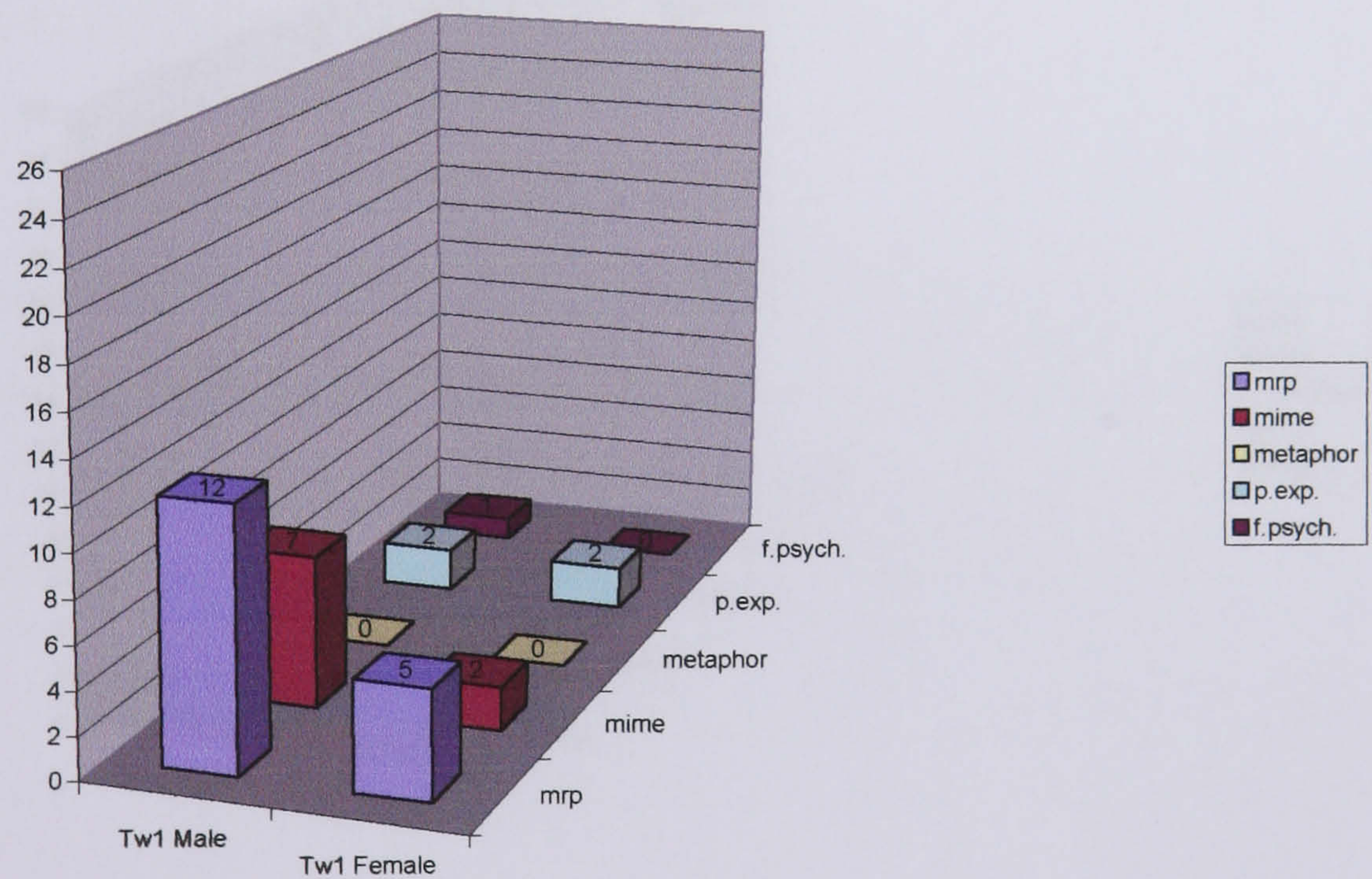


Comparison of **Bar Charts 13.5** and **13.6** shows that both the younger and older girls used mainly *mental role play* in their response to questions for part 3 of *The Puppy Story* interview. Younger boys used a mixture of devices: *mental role play*, *mime* and *metaphor*. Older boys' uses of *mental role play* increased to a similar level as that used by the older girls. However, while the older boys' use of *mime* decreased their use of *personal experience* increased. This increase was not seen in the girls' data, their use of other devices remaining low at both ages.

Bar Chart 13.7
Comparison of number and type of devices used by boys and girls aged 7 - 8 years in part 1 of *The Twins Story*

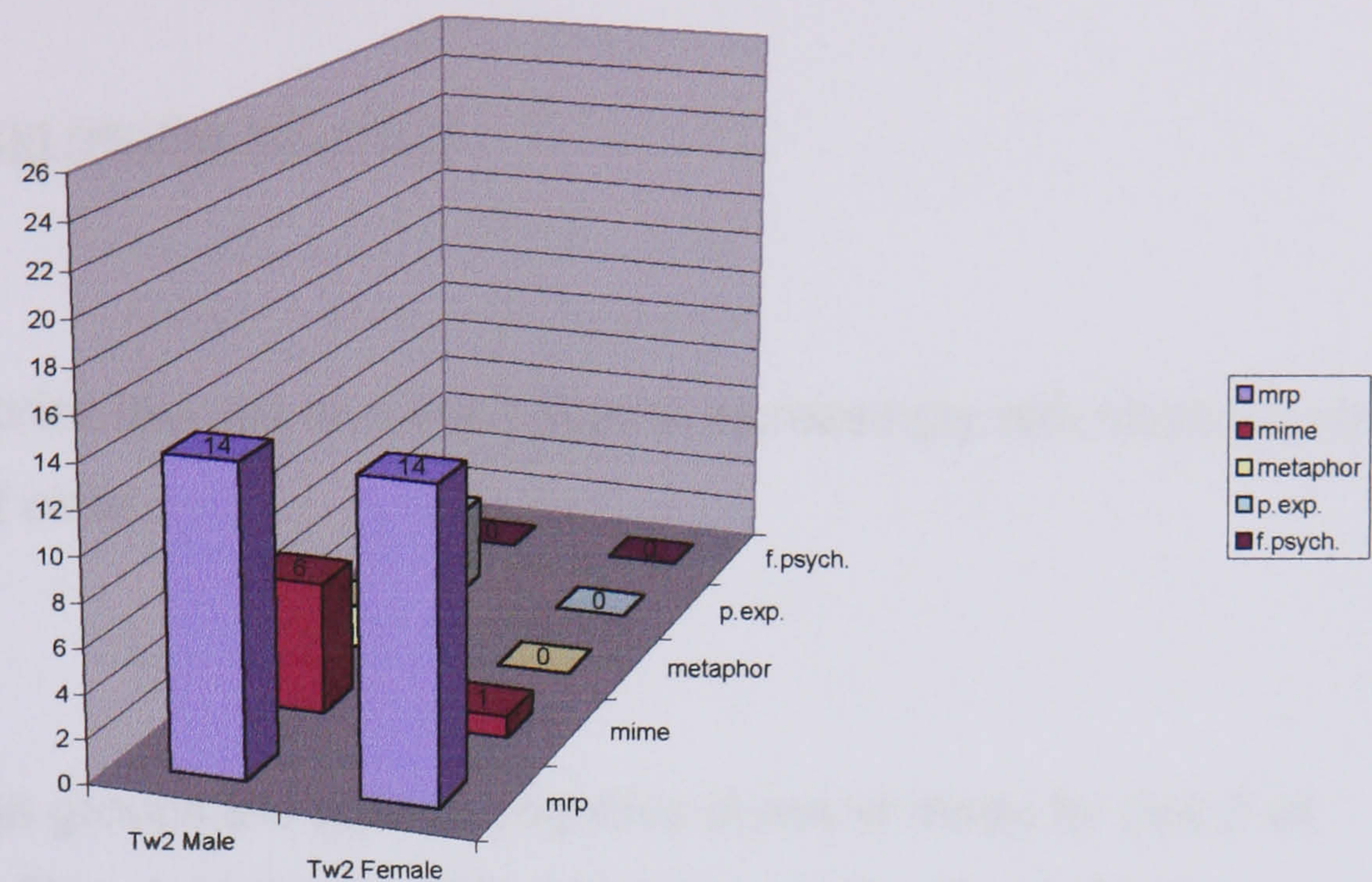


Bar Chart 13.8
Comparison of number and type of devices used by boys and girls aged 10 - 11 years in part 1 of *The Twins Story*

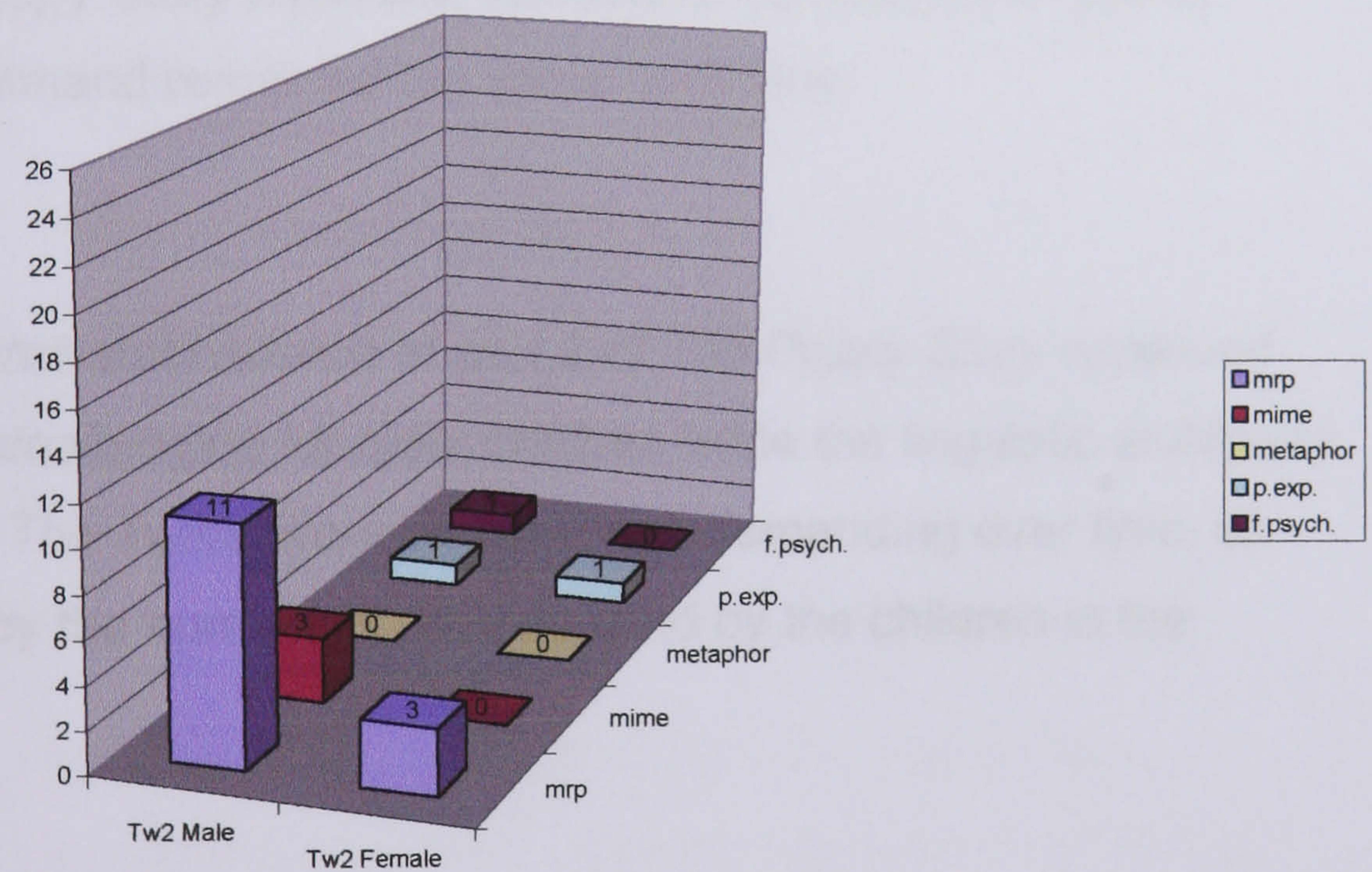


Comparison of **Bar Charts 13. 7** and **13. 8** show a difference in the use of devices between boys and girls at both ages. Younger boys used mainly *mime* in their response to interview questions relating to part 1 of *The Twins Story*. Younger girls used mainly *mental role play*. Older boys' use of devices showed an increase in their use of *mental role play* which became similar in number to that of the younger girls. Older boys' use of *mime* decreased although this remained relatively high and is their second most frequently used device. Older girls used few devices in response to part 1 of *The Twins Story* although of these *mental role play* continued to have the highest number.

Bar Chart 13.9
Comparison of number and type of devices used by boys and girls aged 7 - 8 years in part 2 of *The Twins Story*



Bar Chart 13.10
Comparison of number and type of devices used by boys and girls aged 10 - 11 years in part 2 of *The Twins Story*



Comparison of **Bar Charts 13.9** and **13.10** shows that both younger and older boys used mainly *mental role play* in their response to part 2 of *The Twins Story*. Boys also used *mime* although this use decreased over time. Younger girls also used *mental role play* and scored the same number of uses as the younger boys. However the girls' use of *mental role play* decreased substantially by age 10 -11 years.

Summary of Results 10 – 13 (Cognitive-linguistic devices)

General results (non gender specific):

- For both stories the use of *mime* became increasingly redundant as the children got older.
- For both age groups the type of cognitive demand made by part 2 of *The Puppy Story* (emotional ambivalence) and *The Twins Story* (linguistic ambiguity) differed as represented by the different devices used in response to the interviews. For part 1 of both stories, and part 3 of *The Puppy Story* interview, (emotional causality) the type of cognitive demand remained the same over time.
- The emotional ambivalence of part 2 of *The Puppy Story* remained cognitively challenging for older children while the linguistic ambiguity of part 2 of *The Twins Story* became less demanding over time, as measured by the number of devices used by the children in the interviews.

Gender specific results:

- Boys used more *mime* than girls although this decreased with age (see above).
- Girls' use of devices was clustered around the most emotionally complex story parts (parts 2 and 3 of *The Puppy Story* interview). This selectiveness increased with age. No such clustering effect was found in the boy's data.
- Girls of both ages were more selective than boys in the type of device used when responding to the different interview procedures. *Metaphor* was used when answering questions relating to emotional ambivalence. *Mental role play* was used when answering questions relating to emotional causality. Younger girls used *mental role play* in response to questions relating to linguistic ambiguity. However this use decreased with age and older girls used few devices for either part of *The Twins Story*.
- Unlike the girls, older boys continued to find *The Twins Story* challenging as evidenced by their continued use of devices for both parts 1 and 2.

PERFORMANCE ERRORS

The following stage of analysis looked at the performance errors which occurred in children's discourse and expressive language when responding to the structured interviews. The structured interviews consisted of:

The Puppy Story interview Part 1 (P1): introduction

The Puppy Story interview Part 2 (P2): emotional ambivalence

The Puppy Story interview Part 3 (P3): emotional causality

The Twins Story interview Part 1 (Tw1): introduction

The Twins Story interview Part2 (Tw2): linguistic ambiguity

Errors were identified and counted per story interview part. Discourse errors were identified under the categories:

- Quantity
(Failure to provide sufficient information for the listener, use of non-specific vocabulary, informational redundancy or need for repetition)
- Relation
(Poor topic maintenance, inappropriate responses, failure to ask relevant questions)
- Manner
(Linguistic non-fluency, revisions, delays before responding, gaze inefficiency and inappropriate intonational contour)

See pages 177 – 178, this Chapter for further information on these Discourse error categories.

Expressive language performance errors were identified under the categories:

- Lexical errors
(Where whole words are retrieved incorrectly, name confusion, pronoun confusion).
- Syntactic/Morphological errors
(These errors refer to deviations from age appropriate acceptable spoken sentence structures and grammatical structures).
- Phonological errors
(These are speech sound errors. Error types include vowel distortions, voicing, final consonant deletion, stopping, cluster reduction).
- Semantic errors
(These errors relate to a confusion of word meaning).

Appendix 8 gives examples of children's discourse and expressive language performance errors.

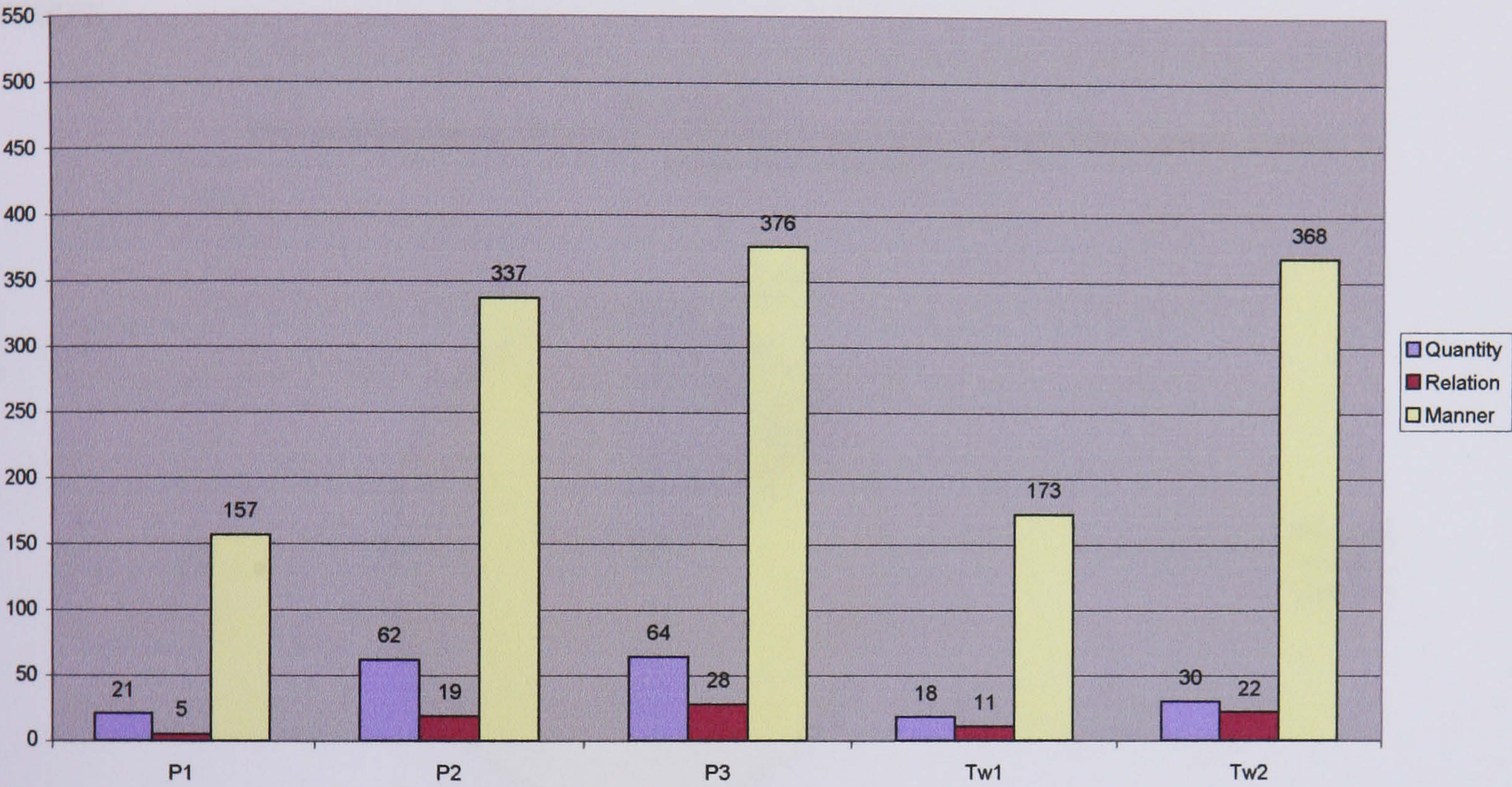
The first stage of analysis (14) was to investigate the total number of discourse errors and linguistic performance errors made by all children (girls and boys) according to age and story part.

For the next stage of analysis the discourse errors and expressive language errors were added together to give a total number of performance errors for each child and for each story part. This was because the number of expressive language performance errors was very small. Small or zero quantities can affect the robustness of statistical analysis. Statistical analysis was then carried out (15). Gender differences were also investigated (16).

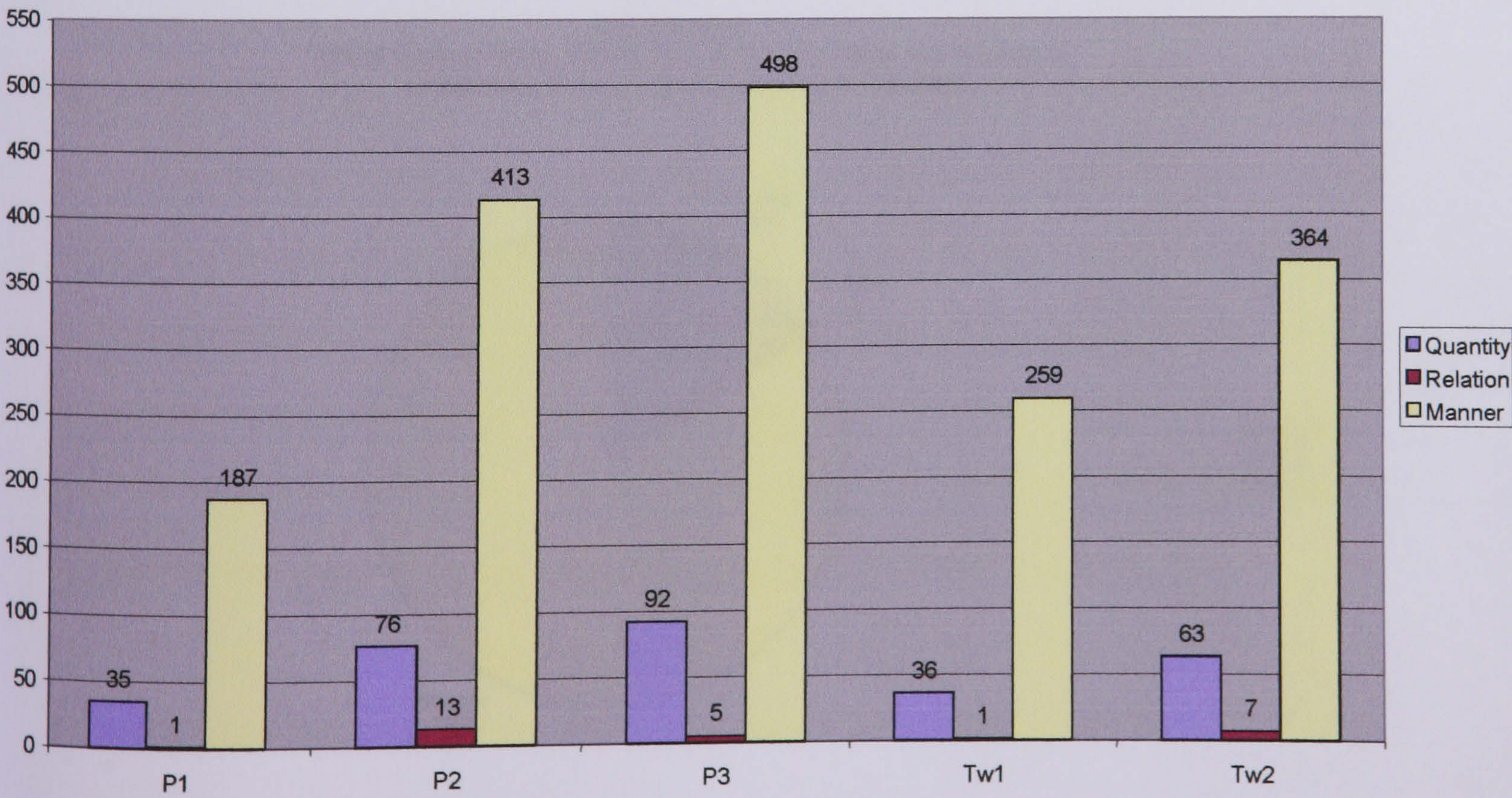
14. Discourse errors

The following numbers of errors were identified in the two age groups for each of the story interview parts:

Bar Chart 14.1
The number of discourse errors made by children aged 7 - 8 years by category and story part

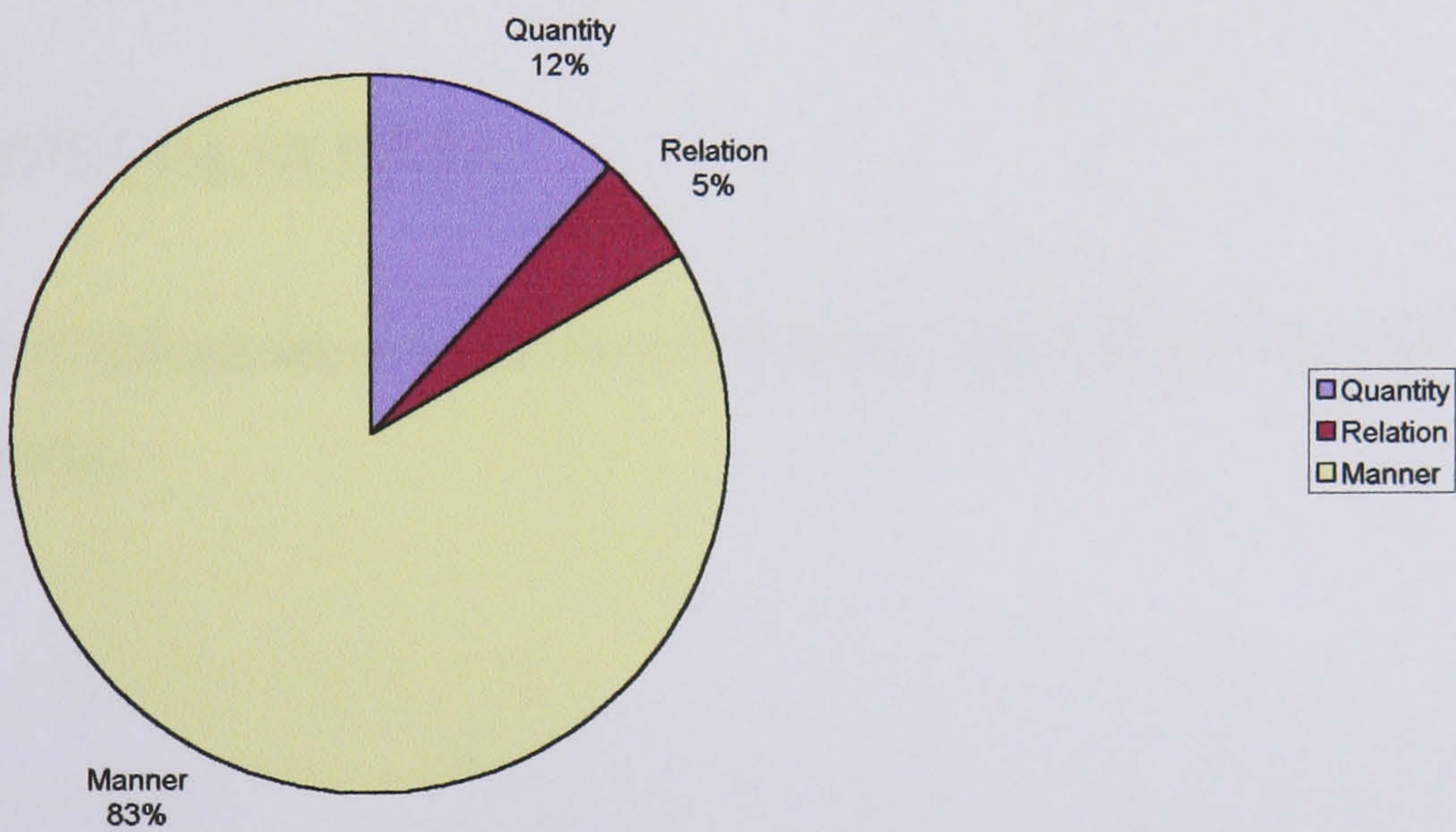


Bar Chart 14.2
The number of discourse errors made by children aged 10 - 11 years by category and story part

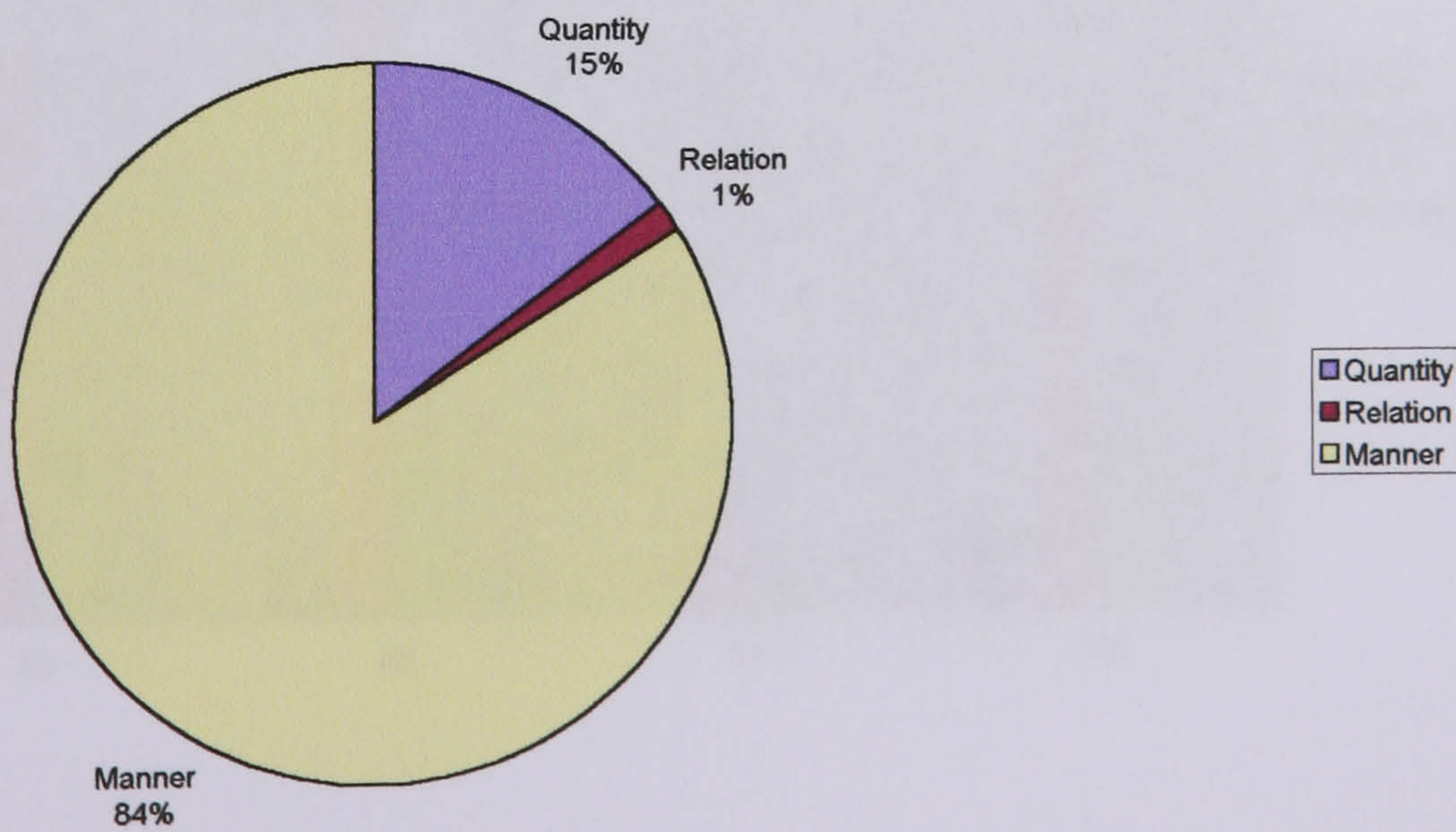


It can be seen that for both *The Puppy Story* and *The Twins Story* the main errors recorded for both age groups were in the Manner category. These related to linguistic non-fluency (e.g. repetitions and hesitations), revisions (e.g. mazes), and delays before responding and gaze inefficiency. The proportion of errors made by the children according to error category remained remarkably similar over time. This can be seen when the total number of errors for both stories are given as percentages for both age groups:

Pie Chart 14.1
Total discourse errors (*The Puppy Story* + *The Twins Story*) made by children aged 7 - 8 years according to category



Pie Chart 14.2
Total discourse errors (*The Puppy Story* + *The Twins Story*) made by children aged 10 - 11 years according to category



Comparing **Bar charts 14.1 and 14.2** it can be seen that the numbers of errors for all story interview parts *increased* with age apart from:

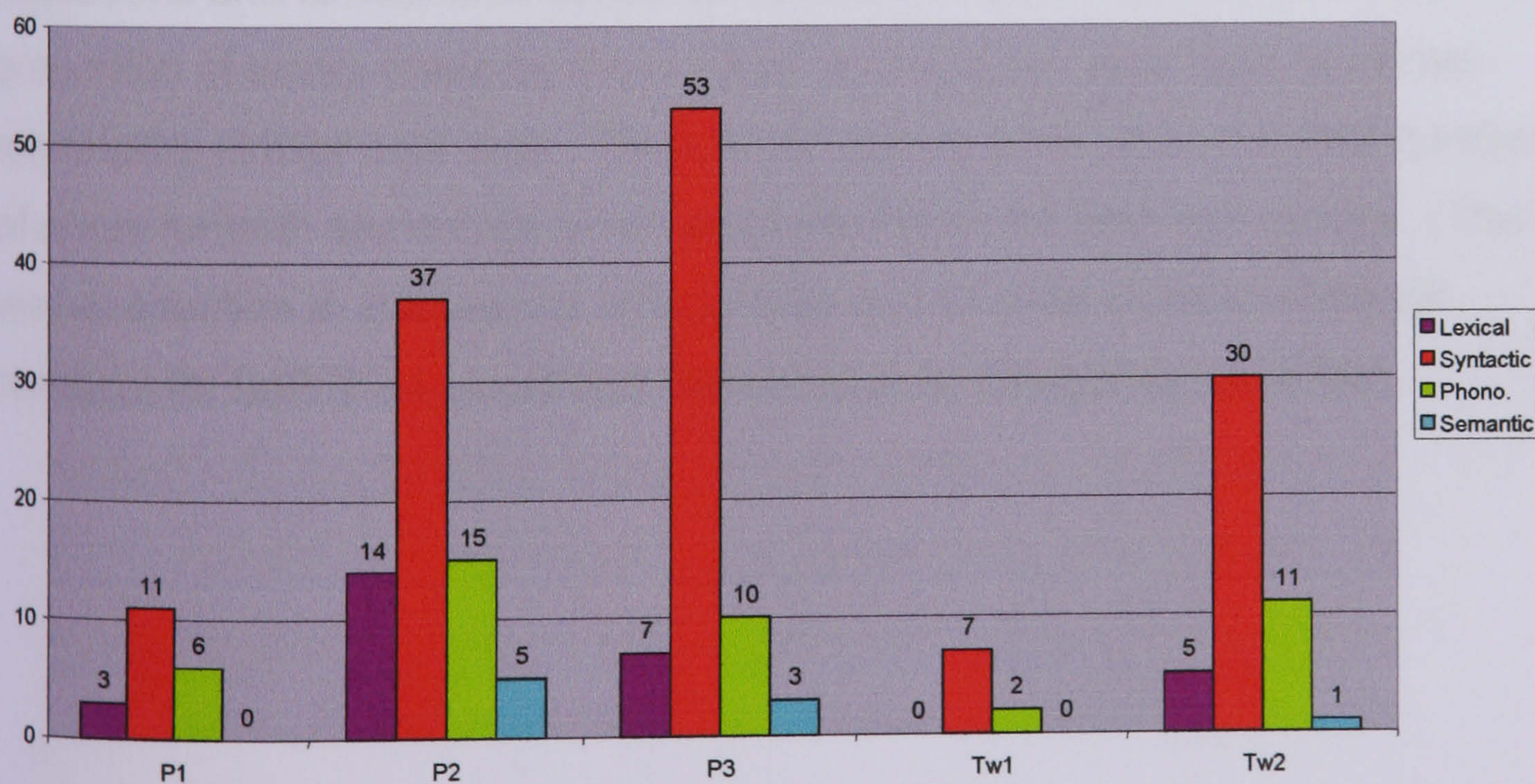
- Relation category errors which decreased with age in all story interview parts
- Manner category errors in the second part of *The Twins Story* (Tw2) which very slightly decreased (368 at age 7 – 8 years vs. 364 at age 10 – 11 years).

Expressive language performance errors

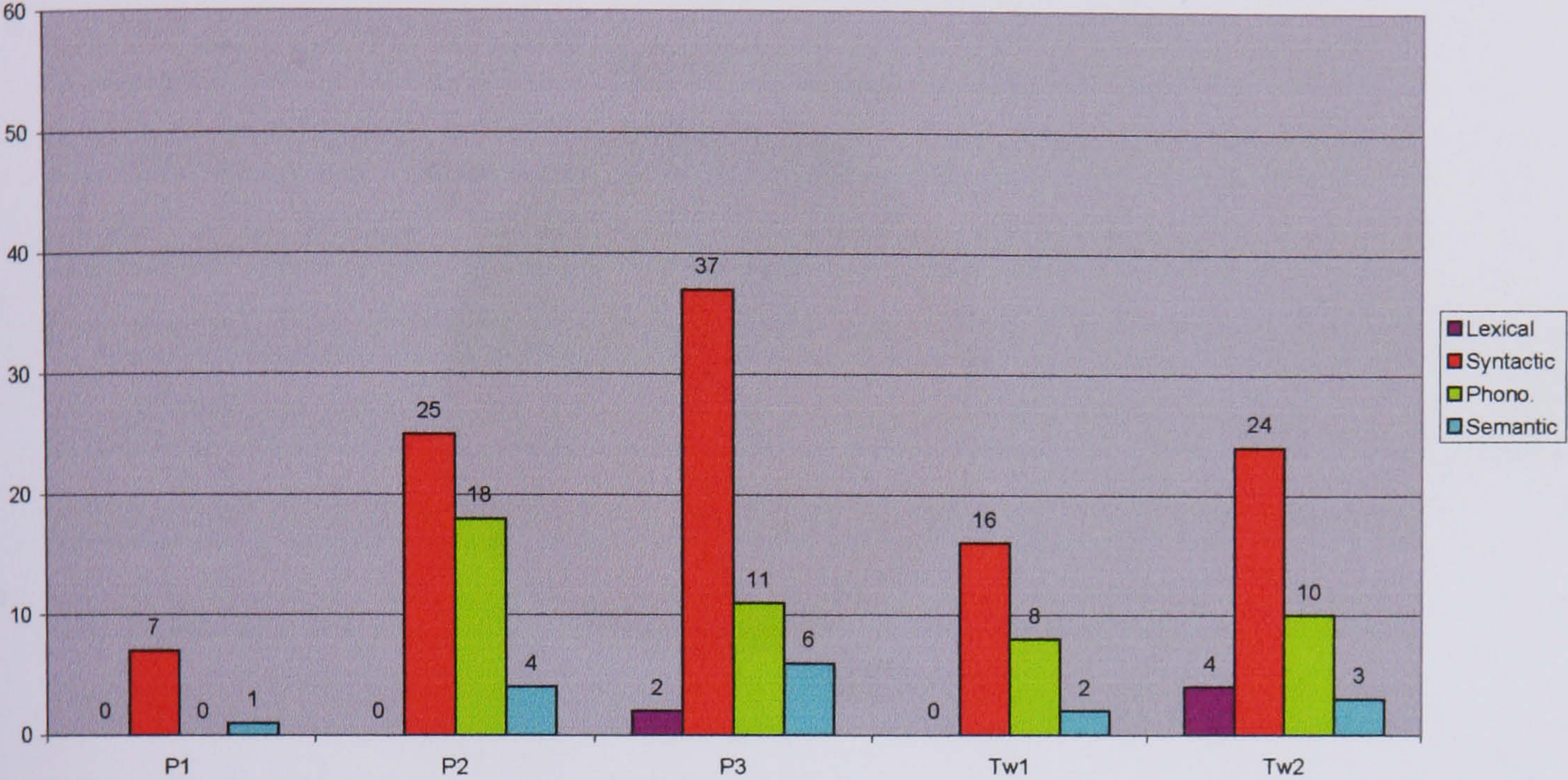
The following numbers of errors were identified in the two age groups for each of the story interview parts:

Bar Chart 14.3

Number of expressive language performance errors made by children aged 7 - 8 years by error type and story part



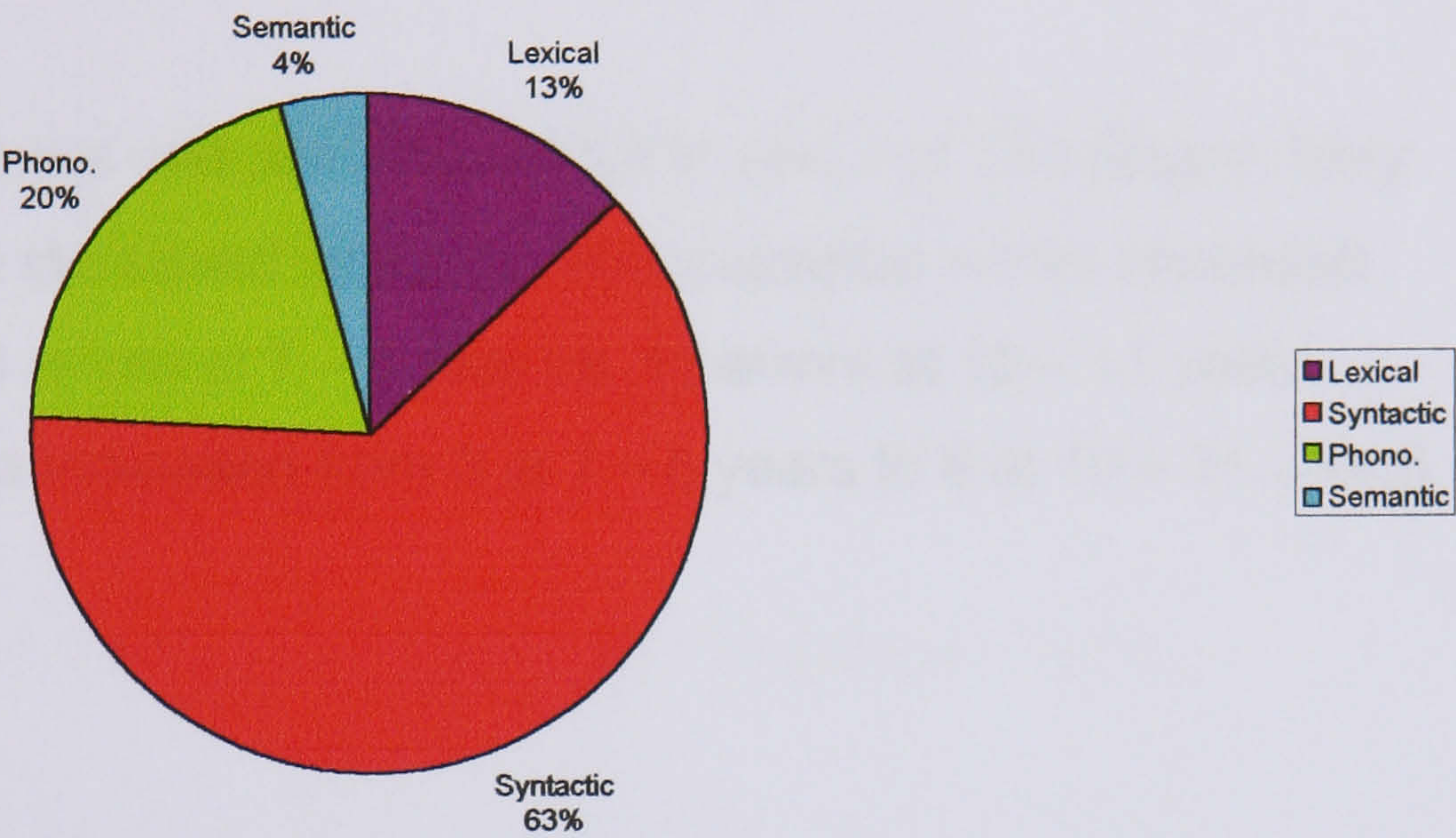
Bar Chart 14.4
Comparison of the number of expressive language errors made by children aged 10 - 11 years by error type and story part



It can be seen that for both *The Puppy Story* and *The Twins Story* the main errors recorded for both age groups were syntactic. This is not surprising given that the main discourse errors recorded were related to repetitions, hesitations and revisions of sentence structure. As with discourse errors, the proportion of errors made by the children according to error type remained remarkably similar over time. This can be clearly seen when the total number of errors for both stories are given as percentages for both age groups. (There was a reduction in the Lexical errors made by the older children although numbers for both the Lexical and Semantic error categories were low).

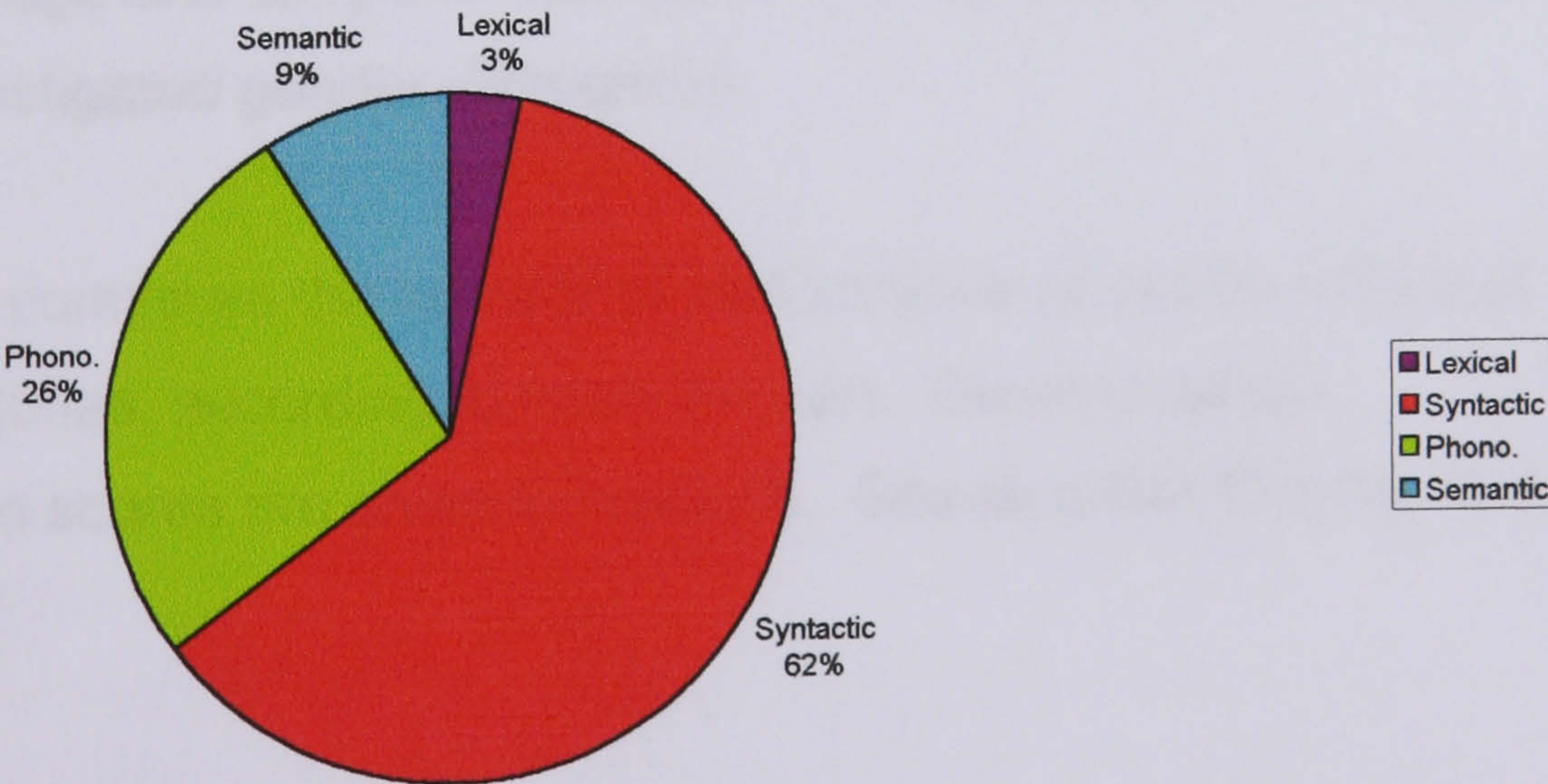
Pie Chart 14.3

Total number of expressive language performance errors (*The Puppy Story* + *The Twins Story*) made by children aged 7 - 8 years according to error type



Pie Chart 14.4

Total number of expressive language performance errors (*The Puppy Story* + *The Twins Story*) made by children aged 10 - 11 years according to error type



Comparing **Bar charts 14.3** and **14.4** it can be seen that the number of expressive language errors for all story interview parts *decreased* with age apart from:

- Errors in the first part of *The Twins Story* all of which increased with age.
- Phonological errors and semantic errors in part 3 of *The Puppy Story* interview which increased with age. (Phonological errors increased only slightly: 10 errors at 7 – 8 year vs. 11 errors at 10 – 11 years. Semantic errors increased from 3 at 7 – 8 years to 6 at 10 – 11 years)

15. Performance errors

For the next stage of analysis the discourse errors and expressive language performance errors were added together to give a total number of performance errors for each child and for each story interview part. The first level of analysis (15, see below) looked at the total number of performance errors according to age and story interview part. The second level of analysis (16, page 264) investigated gender differences.

The following table compares the number of performance errors for both age groups, and both stories, according to interview part. Developmental differences between scores are given in brackets. See also **Bar Charts 15.1** and **15.2** page 263.

Table 15. 1

PERFORMANCE ERRORS

(For ease of comparison performance errors for *The Twins Story* are tabled first).

Tw1 = total number of performance errors in part 1 of *The Twins Story* interview
Tw2 = total number of performance errors in part 2 of *The Twins Story* interview
P1 = total number of performance errors in part 1 of *The Puppy Story* interview
P2 = total number of performance errors in part 2 of *The Puppy Story* interview
P3 = total number of performance errors in part 3 of *The Puppy Story* interview

Figures for (total number of) Performance errors:

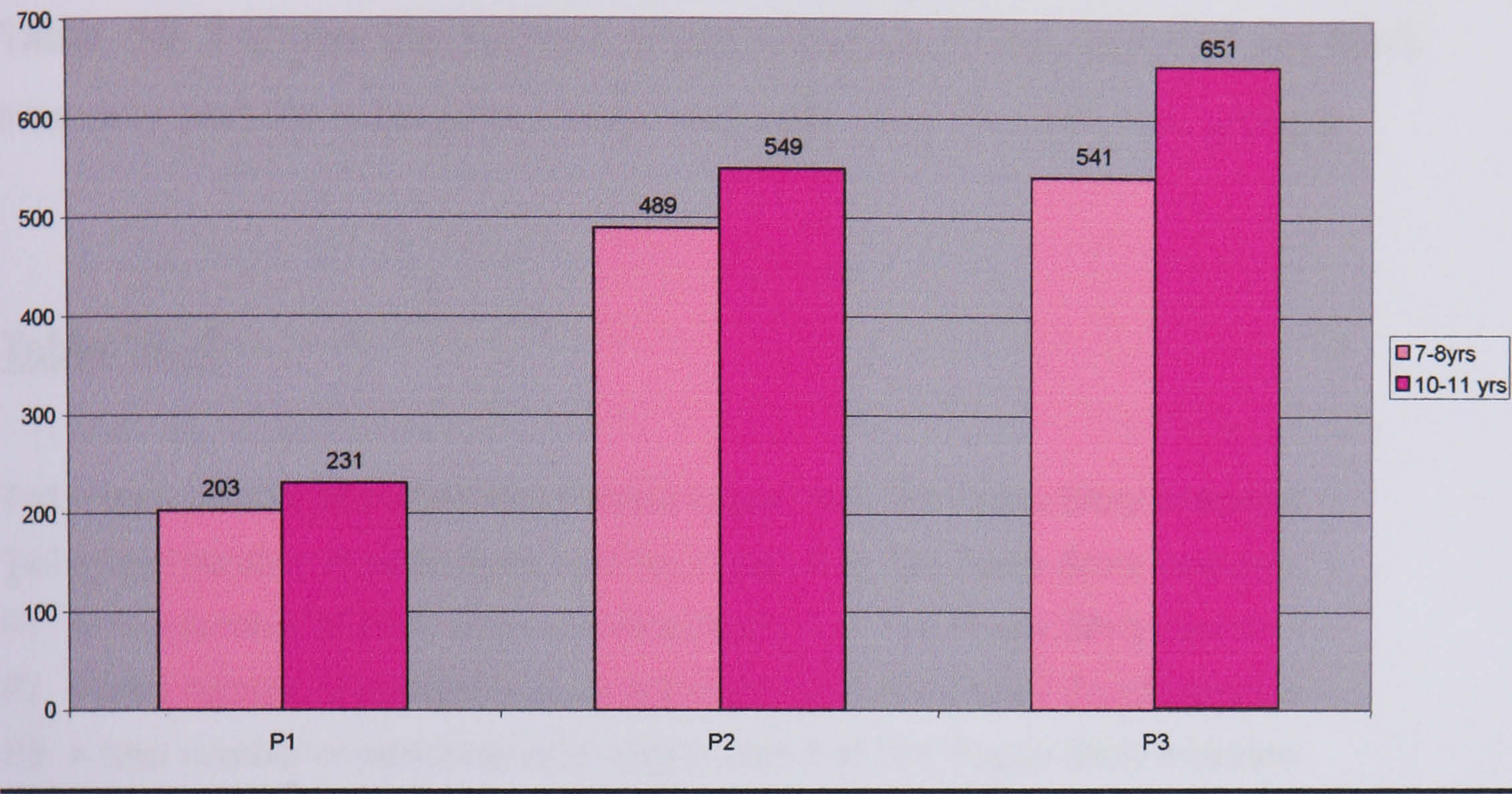
	7-8yrs	10-11yrs		7-8yrs	10-11yrs
Tw1	211	322 (111)	Tw2	467	475 (8)
P1	203	231 (28)	P2	489	549 (60)
			P3	541	651 (110)

The above table shows that when gender was not taken into consideration performance errors increased with age for both stories and for all story interview parts. The degree of increase was however variable. Scores for P1 and Tw2 remained remarkably consistent over time. P2 showed a slight increase in performance errors, with the greater difference in number of errors recorded occurring for Tw1 and P3.

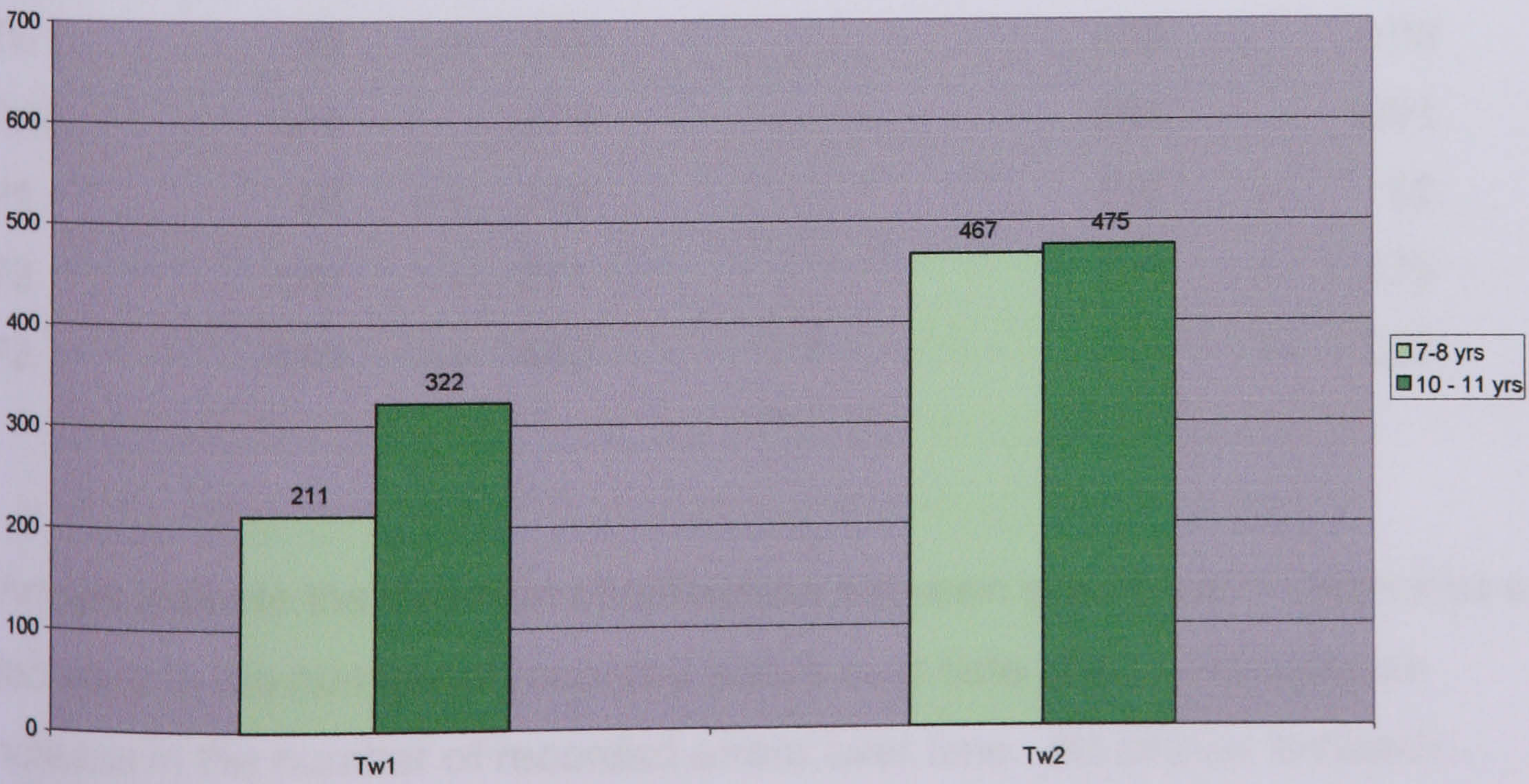
Nonparametric statistics (Mann-Whitney Tests) were used to look at the developmental differences in the total number of performance errors for *The Puppy Story* and *The Twins Story*. No significant differences were found at this level of analysis:

The Puppy Story p = 0.300
The Twins Story p = 0.355

Bar Chart 15.1
Comparison of the number of children's performance errors at ages 7 - 8 years and 10 - 11 years for each part of *The Puppy Story*



Bar Chart 15.2
Comparison of the number of children's performance errors at ages 7 - 8 years and 10 - 11 years for each part of *The Twins Story*



16. Gender Differences in Numbers of Performance Errors

Analysis of changes in the total number of performance errors according to age showed no statistical difference for both *The Twins Story* and *The Puppy Story*. However, developmental gender differences were also investigated. **Table 16. 1** shows the number of performance errors recorded per story interview part for male and female subjects, and for both age groups.

Table 16. 1

Tw1 = total number of performance errors in part 1 of *The Twins Story* interview
Tw2 = total number of performance errors in part 2 of *The Twins Story* interview
P1 = total number of performance errors in part 1 of *The Puppy Story* interview
P2 = total number of performance errors in part 2 of *The Puppy Story* interview
P3 = total number of performance errors in part 3 of *The Puppy Story* interview

Gender differences across age groups

	7-8yrs		10-11yrs			7-8yrs		10-11yrs	
<u>Male</u>					<u>Female</u>				
Tw1	99	→	214			112		108	
Tw2	264		274			203		201	
P1	85	→	149			118	←	82	
P2	189	→	371			300	←	178	
P3	230	→	442			311	←	209	

(Arrows indicate the direction of difference between scores, i.e. ← indicates a decrease in the number of recorded errors over time and → indicates an increase in the number of recorded errors over time. No arrows between scores, indicates numbers which show little variation over time).

Table 16. 1 shows developmental gender differences. For girls, the number of performance errors recorded for both parts of *The Twins Story* showed little variation between age groups. The number of recorded performance errors made by girls during the interviews for all three parts for *The Puppy Story* showed a decrease over time, older girls making fewer errors than the younger girls.

For boys, the number of recorded errors increased for the first part of *The Twins Story* and showed little variation for part two of *The Twins Story*. The number of recorded performance errors made by boys during the interviews for all three story parts for *The Puppy Story* showed an increase over time, older boys making more errors than the younger boys.

Within group gender differences were also noticeable. The younger girls made more performance errors than their male peers in all parts of *The Puppy Story* interview. The younger girls made more errors than the boys in the first part of *The Twin Story*, but less in the second part of *The Twin Story*. The older girls made fewer errors than the boys in all parts of the structured interviews for both *The Twins Story* and *The Puppy Story*.

Analysis using box plots was carried out to highlight these developmental trends. Please see **Figures 16.1 to 16. 5** (pages 267 – 271).

Nonparametric statistics (Mann-Whitney Tests) were carried out to look at developmental gender differences in the total number of recorded performance errors for *The Puppy Story* (parts 1 and 2) and *The Twins Story* (parts 1 and 2). Part 3 of *The Puppy Story* interview was not included so a direct comparison could be made between the two stories and relating only to the two types of ambiguity. The following results were obtained:

The Puppy Story

Males $p = 0.074$ (not statistically significant)

Females $p = 0.636$ (not statistically significant)

However, given the near significance of the p level for the boys' performance errors, further analysis was conducted in order to calculate the subject sample size likely to show a significant difference in the number of male performance errors for *The Puppy Story*. The calculation performed, using the computer software StatsDirect version 2.2.3, gave the following result:

Alpha = 0.05 (significance level)

Power = 0.8 (i.e. 80% power)

Difference between means = 16

s.d. = 14

Estimated minimum sample size = 14 male subjects per group.

To be 80% sure of detecting a performance error difference of 16 at the 5% significance level, 14 male subjects in each group would be required.

The Twins Story

Males $p = 0.270$ (not statistically significant)

Females $p = 0.958$ (not statistically significant)

Box plot analysis further described this developmental gender difference (see **Figures 16. 1 to 16. 7**, pages 267 - 273). For *The Puppy Story* the older boys' expressive language contained considerably more errors than that of their female peers. This trend was not so pronounced, and was not statistically significant, for *The Twins Story*.

Figure 16. 1
Box plots comparing the median range of scores for performance errors
in response to the interview questions relating to Part 1 of *The Twins*
Story for both age groups, and according to gender.

TW1LINGB = number of performance errors (linguistic breakdown) for part 1 of *The Twins* Story

TW1LINGB

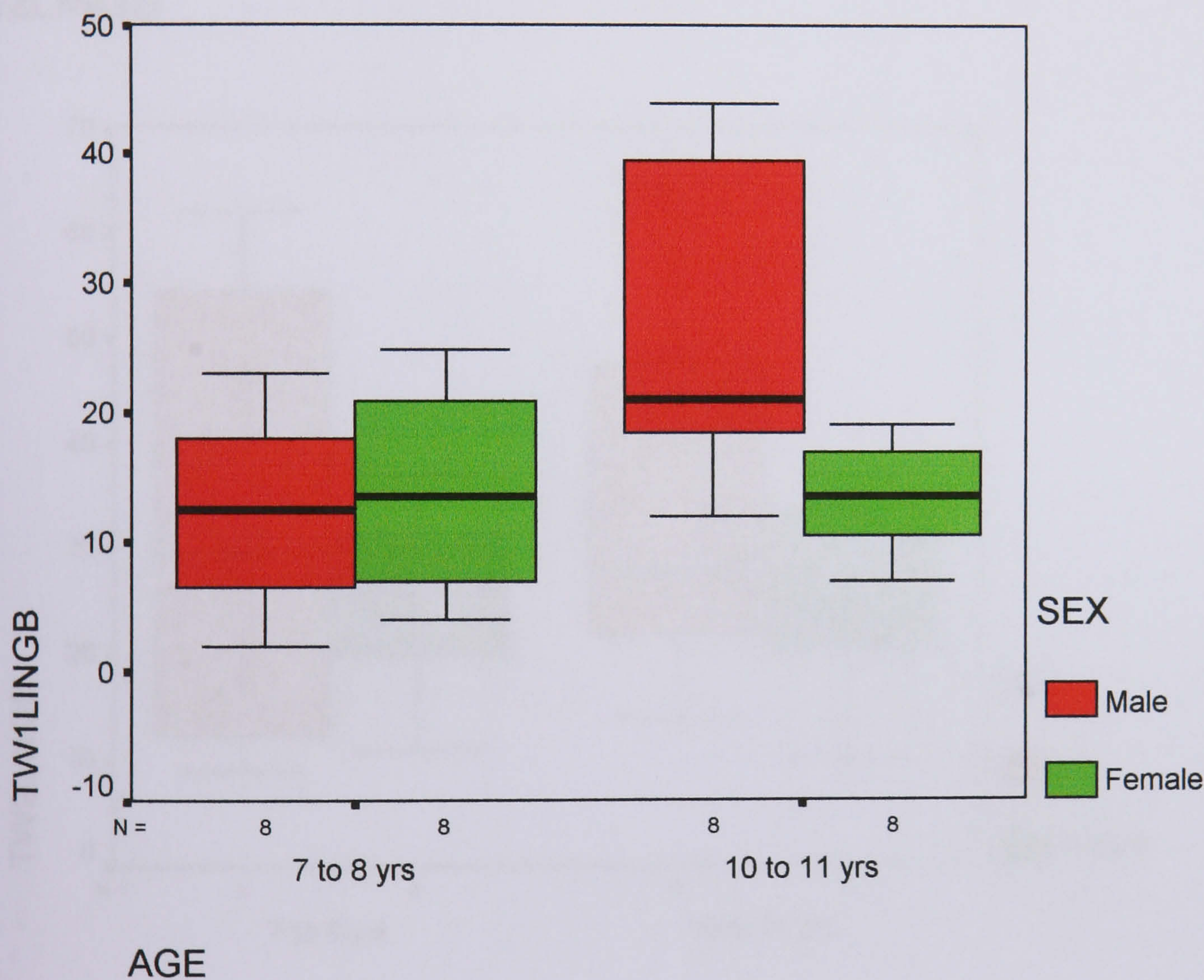


Figure 16. 1 shows very similar median values for performance errors for the younger aged boys and girls in part 1 of *The Twins* Story. The median values for performance errors remain very similar for the younger and older girls, but show a marked increase between the younger and older boys. This reflects the increase in the number of performance errors made by the older boys relative to the younger subjects (both genders) and the older girls.

Figure 16. 2
Box plots comparing the median range of scores for performance errors
in response to the interview questions relating to Part 2 of *The Twins*
Story for both age groups, and according to gender.

TW2LINGB = number of performance errors (linguistic breakdown) for part 2 of *The Twins* Story

TW2LINGB

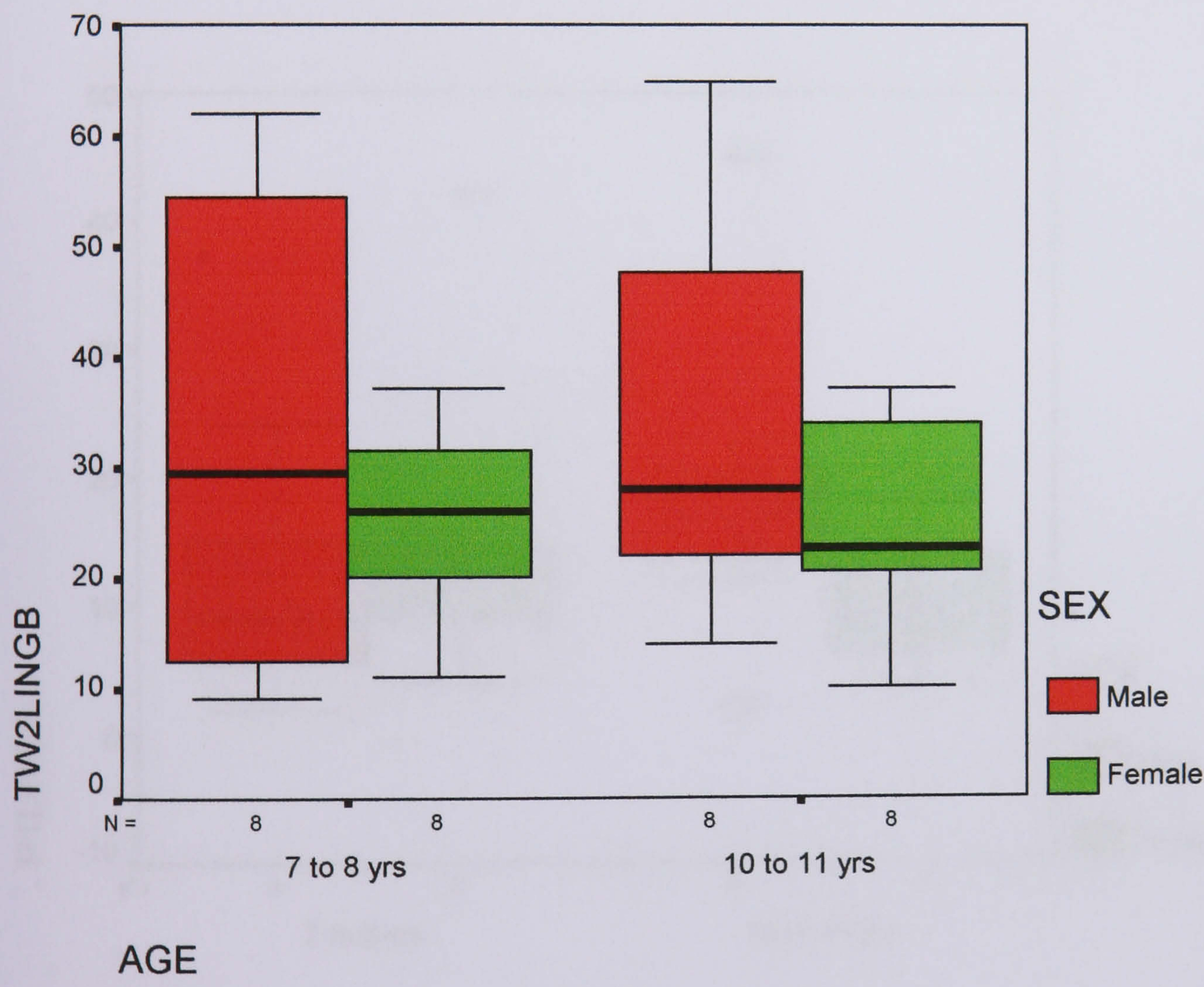


Figure 16.2 Comparison of median values reveals the difference between the older boys and girls performance errors for part 2 of *The Twins* Story. The older and younger girls had a lower median value (and fewer errors) in comparison to their male peers. This difference in median values between the boys and girls increased with age.

Figure 16. 3
Box plots comparing the median range of scores for performance errors
in response to the interview questions relating to Part 1 of *The Puppy*
Story for both age groups, and according to gender.

P1LINGB = number of performance errors (linguistic breakdown) for part 1 of *The Puppy* Story

P1LINGB

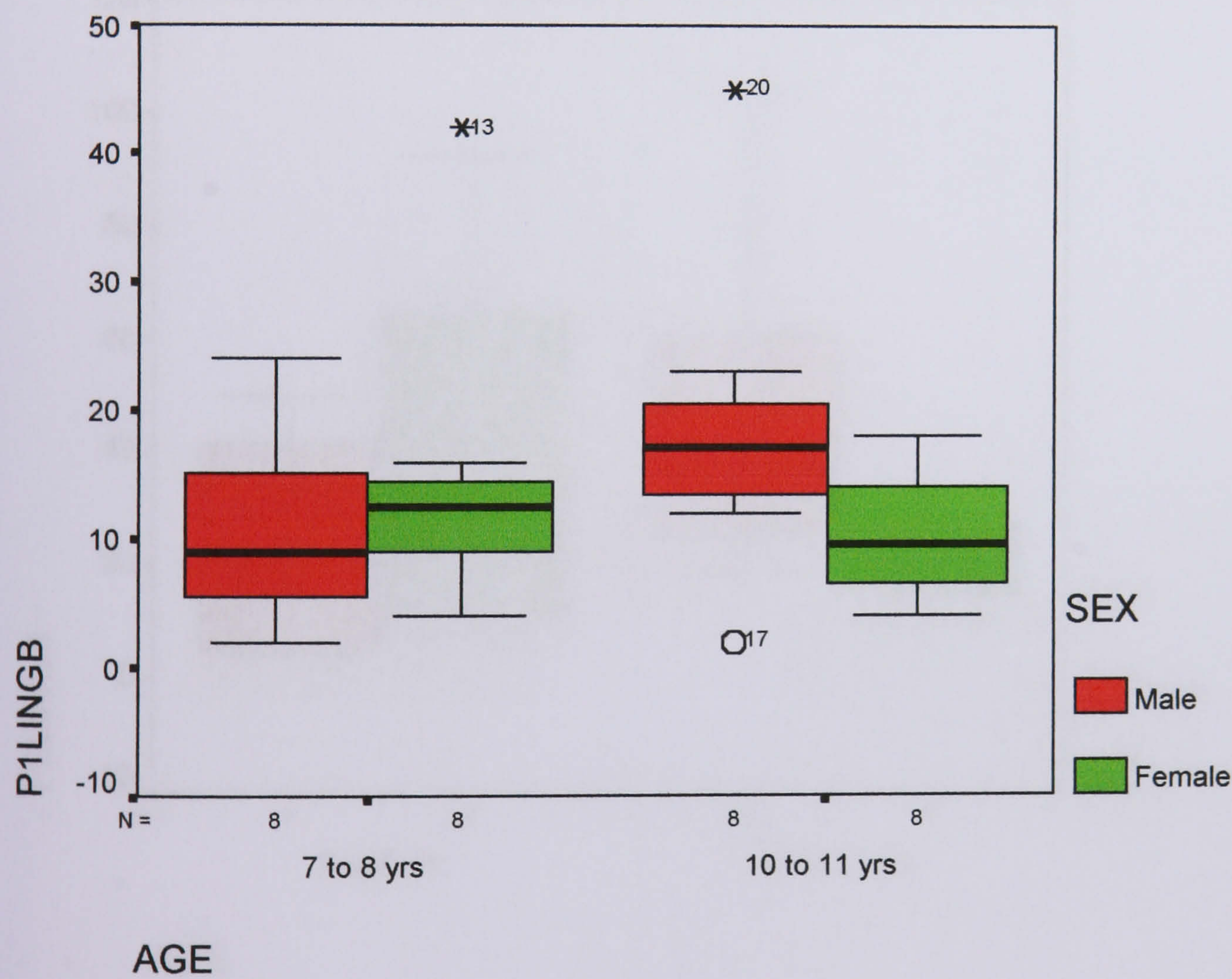


Figure 16.3 Comparison of median values shows how the boys' increase in performance errors and the girls' decrease in performance errors became more pronounced with age.

Figure 16. 4

Box plots comparing the median range of scores for performance errors in response to the interview questions relating to Part 2 of *The Puppy Story* for both age groups, and according to gender.

P2LINGB = number of performance errors (linguistic breakdown) for part 2 of *The Puppy Story*

P2LINGB

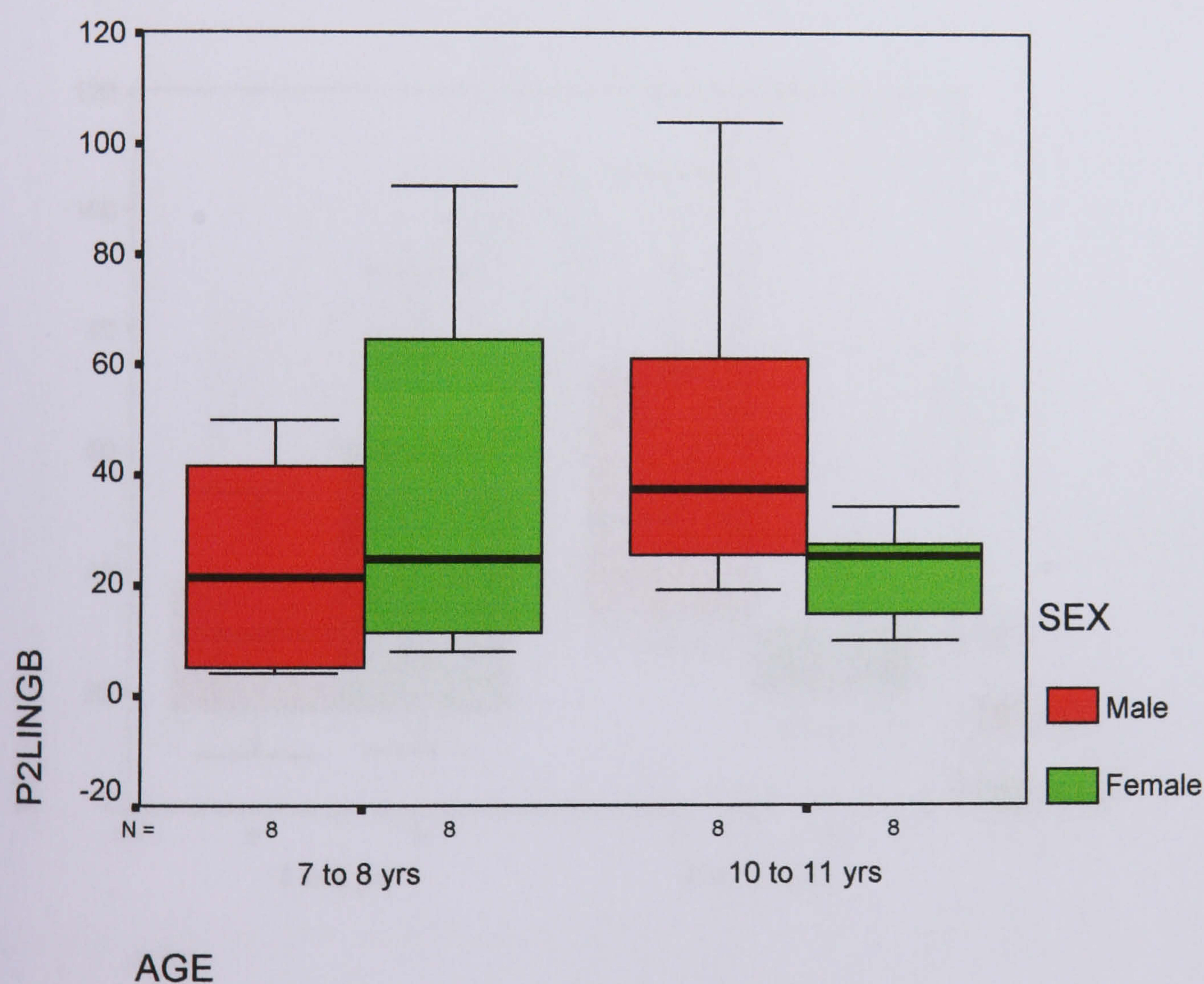


Figure 16.4. Although overall the younger girls made more performance errors than the younger boys in part 2 of *The Puppy Story* (300 errors vs 189 errors), the median values were very similar. A far greater difference in median scores occurred between the older boys and girls when boys' performance errors increased and girls' performance errors decreased.

Figure 16. 5

Box plots comparing the median range of scores for performance errors in response to the interview questions relating to emotional causality (P3) in *The Puppy Story* for both age groups and according to gender.

P3LINGB = number of performance errors (linguistic breakdown) for part 3 of *The Puppy Story*

P3LINGB

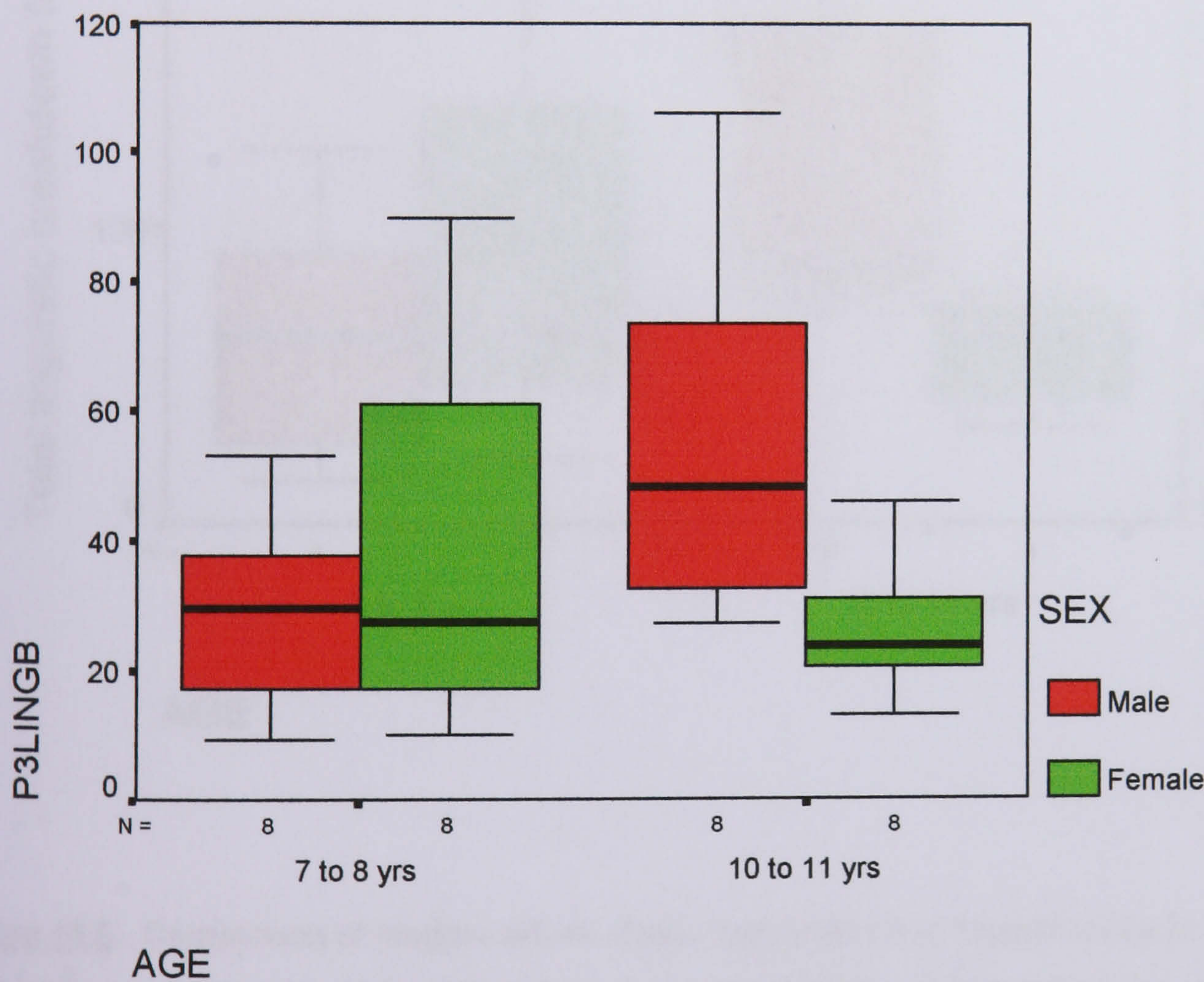


Figure 16.5. shows that while the younger girls made more performance errors than the younger boys in part 3 of *The Puppy Story* interview (311 vs 230) the median values were in fact very similar. A reversal occurred in the older group as girls' errors decreased and boys' errors increased. Comparison of median values for this older group shows this reversal was more marked for boys than girls.

Figure 16. 6

Box plots comparing male and female median range of scores for total recorded performance errors (linguistic breakdown) in *The Puppy Story*.

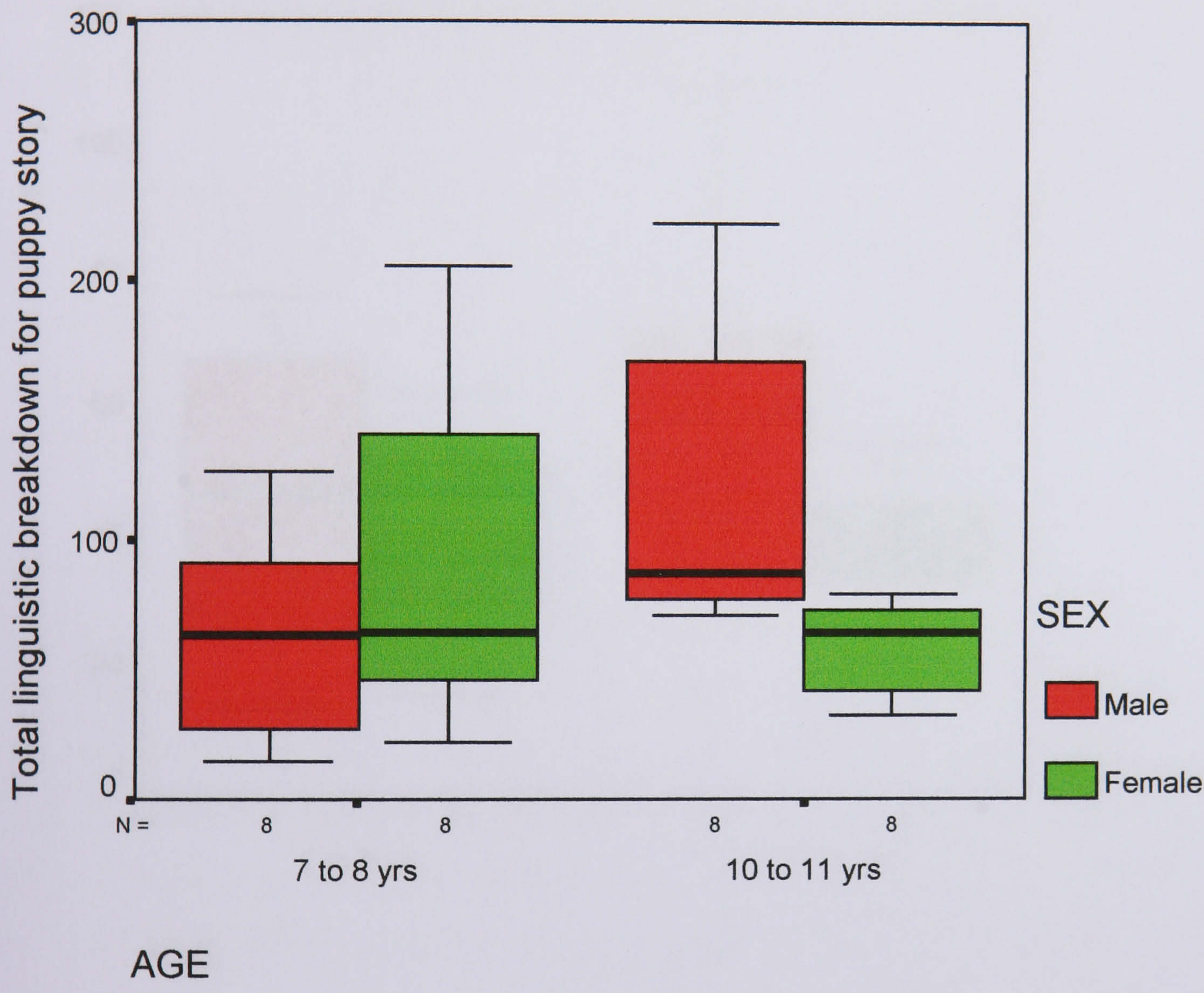


Figure 16.6 . Comparison of median values shows that when performance errors in all three parts of the story interview (P1 + P2 + P3) were added together gender difference was seen only in the older age group.

Figure 16. 7

Box plots comparing male and female median range of scores for total recorded performance errors (linguistic breakdown) in *The Twins Story*.

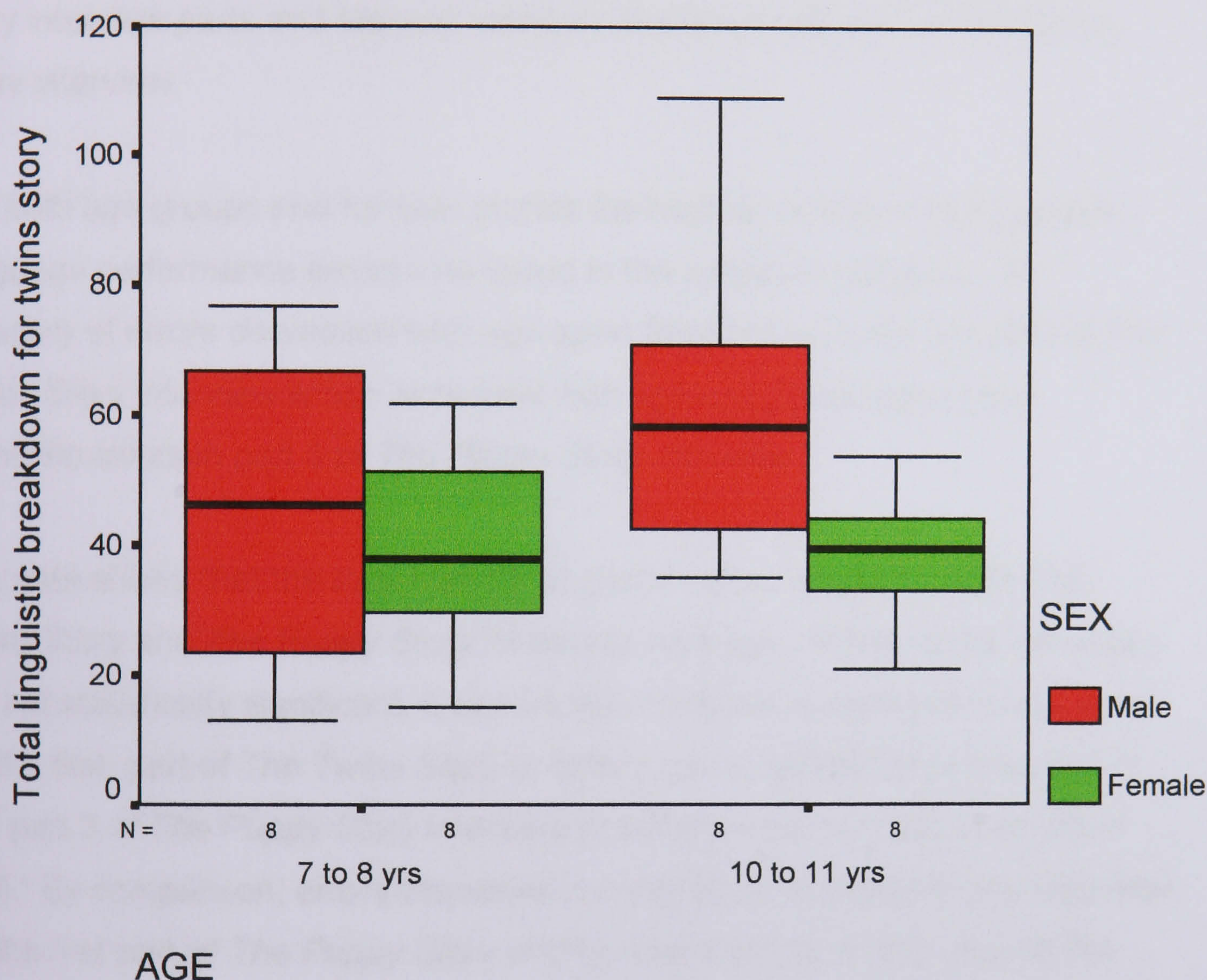


Figure 16.7 . Comparison of median values shows gender differences between the younger boys and girls and the older boys and girls for *The Twins Story*. This difference (boys making more errors than girls) became more pronounced with age. (In *The Puppy Story* this gender difference was seen only in the older subject group). In addition, the median value of the performance errors made by girls remained very similar over time. For boys, the median value of performance errors increased with age.

Summary of Results 14 - 16 (Performance Errors)

For both age groups and for both stories the highest number of recorded discourse errors were found in the Manner category relating to linguistic non-fluency, revisions and delays before responding and gaze inefficiently. All categories of errors *increased* with age apart from errors in the Relation category (incoherent or intelligible responses) which *decreased* with age in all story interview parts and Manner category in the second part of *The Twins Story* interview.

For both age groups and for both stories the highest number of expressive language performance errors was found in the syntactic category. All category of errors *decreased* with age apart from errors in the first part of *The Twins Story* interview which increased with age and phonological and semantic errors in part 3 of *The Puppy Story* interview.

The data shows that the total number of performance errors for both *The Twins Story* and *The Puppy Story* increased with age. While these increases are not statistically significant, it can be seen that the increase occurred most for the first part of *The Twins Story* (a difference in number of errors of 111) and part 3 of *The Puppy Story* interview (a difference in number of errors of 110). By comparison, errors increased by only 28 in response to the interview for the first part of *The Puppy Story* and by only 8 errors in response to the interview on linguistic ambiguity (*The Twins Story* part 2). Responses to the interview for the second part of *The Puppy Story* (emotional ambivalence) showed a rise of 60 errors between the younger and the older age groups. (See Table 15. 1 on page 262)

Comparison of interview parts within age groups showed a remarkable consistency in the numbers of errors recorded for the younger age group. At age 7 – 8 years the first part of *The Twins Story* had 211 errors and the first part of *The Puppy Story* had 203 errors; the second part of *The Twins Story* had 467 recorded errors and the second part of *The Puppy Story* had 489

errors. Differences in error numbers are more pronounced in the older age group. At age 10 – 11 years the first part of *The Twins Story* had 322 errors and the first part of *The Puppy Story* had 231 errors; the second part of *The Twins Story* had 475 recorded errors and the second part of *The Puppy Story* had 549 recorded errors. (See **Table 15. 1** on page 262).

A further level of analysis, looking at gender differences, was carried out in order to examine more closely children's differences in language performance. This level of analysis revealed that in response to the interviews, the number of errors recorded in the girls' expressive language for *The Twins Story* remained stable over time: Tw1 = 112 at age 7 - 8 years and 108 at 10 - 11 years; Tw2 = 203 at age 7 – 8 years and 201 at age 10 – 11 years. (See **Table 16. 1** on page 264). For *The Puppy Story*, which looked at emotional understanding, the error rate decreased for the older girls in all 3 interview parts. (**Table 16. 1** on page 264).

These results are markedly different from those obtained from the analysis of the boys' expressive language in response to the structured interviews. While the boys' performance error rate for Tw2 remained stable over time (264 vs. 274), their error rate for Tw1 showed an increase in errors from 99 at age 7 – 8 years to 214 at age 10 – 11 years. For *The Puppy Story*, the boys' performance error rate increased in all 3 interview parts. This difference in error rate for *The Puppy Story* is likely to be statistically significance with a larger subject group. No such statistical significance is predicted for the difference in boys' performance errors for *The Twins Story* or for the girls' performance errors for either *The Twins Story* or *The Puppy Story*.

SUMMARY OF MAIN RESEARCH FINDINGS

- Children's understanding of emotional ambivalence and their understanding of what causes emotions to change (emotional causality) were both significantly related to their age. This replicates the original findings of Donaldson and Westerman's research (1986) and the British pilot study (see Chapter 2).
- There was a relationship between the two domains of children's understanding of emotion (understanding emotional ambivalence and understanding what causes emotions to change). This replicates the original findings of Donaldson and Westerman's research (1986) and the pilot study (Chapter 2). In this British research the relationship became stronger over time and was statistically significant at age 10 – 11 years.
- Younger (7 – 8 years of age) children's ability to resolve ambivalent emotion and their theories about how emotions change, were significantly related to their ability to use *mental role play*, whereby they are directly able to take on the perspectives of protagonists representing different emotional view points. No such relationship was found for older children (10 -11 years of age). No such relationship was found for children's ability to detect and resolve linguistic ambiguity. (Both age groups).
- Children in both age groups used different cognitive-linguistic devices when answering interview questions relating to emotional ambivalence (part 2 of *The Puppy Story*) than when answering questions relating to linguistic ambiguity (part 2 of *The Twins Story*).

- Children in both age groups used the same type of cognitive-linguistic device when answering interview questions relating to part 1 of both *The Puppy Story* and *The Twins Story*. Children in both age groups used the same cognitive-linguistic device to answer questions relating to emotional causality (part 3 of *The Puppy Story* interview).
- The expressive language of the older girls showed a clustering in their use of cognitive-linguistic devices around the interview procedures relating to the most emotionally complex parts of the stories: part 2 of *The Puppy Story* interview (emotional ambivalence) and part 3 of *The Puppy Story* interview (emotional causality). No such clustering effect was found in the story dealing with linguistic ambiguity (*The Twins Story*).
- The expressive language of the older boys showed *no* such clustering effect in their use of devices.
- Girls were more selective than boys in their use of devices. For both younger and older girls, *metaphor* was used more than any other cognitive-linguistic device when responding to part 2 of *The Puppy Story* and which related to the understanding of emotional ambivalence. (62% at 7 – 8 years of age and 53% at 10 – 11 years of age).
- For both younger and older girls, *mental role play* was used more than any other cognitive-linguistic device when responding to part 3 of *The Puppy Story* interview and which related to children's theories about what causes emotions to change. (58% at 7 – 8 years of age and 61% at 10 – 11 years).

- For both age groups and for both stories the highest number of recorded discourse errors were found in the Manner category relating to linguistic non-fluency, revisions and delays before responding and gaze inefficiently. All categories of errors *increased* with age apart from errors in the Relation category (incoherent or intelligible responses) which *decreased* with age in all story parts and Manner category in the second part of *The Twins Story*.
- For both age groups and for both stories the highest number of expressive language performance errors was found in the syntactic category. All category of errors *decreased* with age apart from errors in the first part of *The Twins Story* interview which *increased* with age and phonological and semantic errors in part 3 of *The Puppy Story* interview.
- There was an *increase* in performance errors (discourse + expressive language performance errors) in the expressive language of older (10 – 11 years of age), language normal boys when resolving emotional ambivalence. This is likely to be significant with a sample size of 14 boys per group. There was little developmental difference in the performance errors of boys when resolving linguistic ambiguity, the number of errors remaining stable over time.
- There was a *decrease* in the performance errors in the expressive language of older (10 – 11 years of age), language normal girls when resolving emotional ambivalence. There was little developmental difference in the performance errors of girls when resolving linguistic ambiguity, the number of errors remaining stable over time.

Research Predictions

The following sections (17 – 18) present the results of the study in relation to the research predictions made at the beginning of this study (pages 112 – 113).

17. General predictions:

It was predicted that between the age of 7 years and 11 years children's responses to questions requiring an explicit understanding of a) linguistic ambiguity (pronoun confusion) and b) emotional ambivalence (love/anger) would show qualitative differences in the number and type of performance errors made.

Results:

Performance errors were examined in two groups: discourse errors (*Quantity, Relation and Manner* errors) and expressive language performance errors (*Lexical, Syntactic, Phonological and Semantic*)

For both age groups and for both stories most discourse errors were in the Manner category (see pages 177 - 178 for summary of category types).

For both age groups and for both stories the predominant expressive language performance error was Syntactic.

The two groups of errors were then amalgamated to form a single group referred to as *performance errors*. The number of errors increased with age for the emotionally complex parts of *The Puppy Story* (interview parts 2 & 3), but not for the linguistically complex part of *The Twins Story* (interview part 2). Errors did increase for part 1 of *The Twins Story*. The increase in errors was found to be specific to the older boys. Neither gender differences nor the

cognitive-linguistic devices had formed part of the original research predictions. Further differences in error rate and type were found between the groups and the stories and these are noted below under the specific research predictions.

18. Specific predictions:

Prediction:

It was predicted that children in the older age group (10 – 11 years) would score at higher levels than the younger children for both the linguistic ambiguity task and the emotional ambivalence task.

Results:

This prediction was confirmed by the results of the study.

94% of 10 – 11 year old children scored at the higher levels for the linguistic ambiguity task (Levels 2 and 3) with 75 % scoring at the highest Level 3.

In comparison 88% of 7 – 8 year old children scored at the higher levels for the linguistic ambiguity task (Levels 2 and 3) with 56 % scoring at the highest Level 3.

94% of 10 – 11 year old children scored at the higher levels for the emotional ambivalence task (Levels 2 and 3) with 81% scoring at the highest Level 3.

In comparison 56% of 7 – 8 year old children scored at the higher levels for the emotional ambivalence task (Levels 2 and 3) with 25% scoring at the highest Level 3.

Prediction:

Children in the younger age group (7 – 8 years) would score at a higher level for the linguistic ambiguity task than for the emotional ambivalence task.

Result:

This prediction was confirmed by the results of the study.

88% of 7 – 8 year olds scored at the higher levels for the linguistic ambiguity task compared with 56% who scored at the higher levels for the emotional ambivalence task. (See above).

Prediction:

Children in the younger age group (7 – 8 years) would produce more discourse errors which affected the meaning of a sentence, rendering it unintelligible to the conversation partner (researcher). These were classified as Relation category errors relating to illogical, incoherent or unintelligible utterances.

Result:

This prediction was confirmed by the results of the study. (However, see also next prediction).

Relation category errors accounted for 5% of the total discourse errors made by the 7 – 8 year old children (both stories). This compares with 1% of total errors for the 10 – 11 year old children.

Overall the numbers of discourse errors increased with age apart from Relation category errors which decreased with age in all story parts (both stories).

Prediction:

Children in the older age group (10 – 11 years) would have discourse errors predominantly related to sentence formulation difficulties (e.g. repetitions, hesitations and mazes) which affected fluency but not the overall meaning of the sentence. These were classified as Manner category errors relating to linguistic non-fluency and revision.

Result:

This prediction was confirmed by the results of the study. (However, see below for proviso)

The discourse errors of the 10 – 11 year old age group were found to be predominately in the Manner category (84% of the total discourse errors for both stories).

However, this was *also* true for the younger 7 – 8 year old children where 83% of errors were in the Manner category. The expected dominance of Manner errors for the older children and Relation errors for the younger age group was not found. Although more Relation category errors were made by the younger children (see above).

Prediction:

For both tasks expressive language performance errors would be classified according to the lexicon, syntax, semantics and phonology. The number of errors would be counted for all children on both tasks. It was predicted that a greater number of errors across all four domains would be found for the emotional ambivalence task.

Result:

This prediction was confirmed by the results of the study although the majority for the emotional ambivalence task was small.

146 expressive language performance errors were made by the children (7 – 11 years of age) on the emotional ambivalence task. This compared with 123 errors made by the children on the linguistic ambiguity task. (This was for both stories, interview parts 1 and 2 only i.e. not including part 3 of *The Puppy Story* interview which had no equivalence in *The Twins Story*).

Prediction:

A comparison would be made of the total number of errors (discourse plus expressive language performance errors) for both tasks between age groups. It was predicted that a greater number of errors across all domains would be found for the younger group.

Result:

This prediction was *not* confirmed by the results of the study.

The younger children (7 – 8 years of age) made 1,370 performance errors while the older children (10 – 11 years of age) made 1,577 errors. Thus the older children made more performance errors than the younger children. This was also found to be the case when part 3 of *The Puppy Story* interview was included (1,911 errors for the younger children and 2,228 errors for the older children). See **Table 15.1** page 262.

The expected decrease of errors with age was found only for the girls. The error rate for boys substantially increased with age. These differences were also related to the type of ambiguity the children were being questioned about. These findings have been detailed in previous sections.

Discussion

The aim of this second study was to compare the linguistic and cognitive skills typically developing children used when identifying and resolving two different types of ambiguity: emotional and linguistic, and to see if one kind of ambiguity was more difficult than the other. Two age groups were used to explore possible developmental differences.

Based on the findings of the first replication study it was hypothesised that the two tasks would result in different error types and rates in children's expressive language according to both their age and the ambiguity the children were responding to. A series of research predictions was made relating to this hypothesis with errors categorised as either discourse errors or expressive language performance errors. Descriptive and inferential statistics were used to test these predictions.

In addition, the children's responses were investigated to see how far the developing profile of cognitive and linguistic skills inferred from the first study was specific to understanding emotional ambivalence. From this investigation five cognitive-linguistic devices were identified. Descriptive and inferential statistics were used to show the importance of these devices within the data.

This Discussion is accordingly divided into two parts. The first part looks at the research predictions made at the beginning of the study (pages 112 - 113) in the light of the results obtained. The second part provides a summary and discussion of the main points on which the third study, of children with specific language impairments (SLI), was then based. This includes the information obtained regarding gender differences and the children's use of cognitive-linguistic devices which had not been part of the original research predictions.

Part One: Evaluation of Research Predictions

Looking at children's performance errors proved a valuable way of identifying cognitive and linguistic demands presented by the two tasks of ambiguity. Both stories were shown to cause predominantly Manner type discourse errors related to hesitations and sentence rehearsals and that, unsurprisingly given this finding, the majority of expressive language errors related to syntax. This was found for both age groups.

The prediction that the younger children would have predominantly Relation type discourse errors while the older children would present with predominantly Manner type errors was not proved for this larger study. However, the younger children did present with more Relation errors than the older children. The number of discourse errors increased with age for all categories (Quantity and Manner) apart from Relation errors which decreased with age for both stories and for all story parts.

This confirms the findings of the first study which suggested the younger children (7 – 8 years of age) presented with more errors than the older children which resulted in illogical or incoherent utterances. This is consistent with Donaldson and Westerman's developmental model of emotional maturity. Children at age 7 – 8 years are most likely to be in transition in their thinking about emotions. They are beginning to realise that contradictory feelings can be experienced towards the same situation or person and can consider the possibility that feelings might interact and influence one another. However, they do not yet know how to reconcile or understand ambivalent emotions. It is not surprising that this cognitive uncertainty is expressed in discourse errors related to illogical and/or incoherent utterances. For Donaldson and Westerman the hallmark of this stage of emotional development is the inconsistency and contradiction of the children's responses to the interview questions.

The counter-intuitive finding that performance errors *increased* with age required explanation. It might have been expected that errors would decrease

as children's thinking matured and their language skills became more robust. Explanation was provided by considering gender differences in the number of errors made by the children for the two different stories. This had not been part of the original research aims as neither Donaldson and Westerman nor the British replication study found any gender differences in the content of the children utterances (i.e. their levels of understanding) at the different stages of emotional development. Since the subjects were typically developing children there was no reason to suppose gender would affect their linguistic ability to express their emotional understanding. However, this was found to be the case.

Identifying performance errors (discourse + expressive language errors) by gender revealed that while the number of errors made by boys increased with age the numbers for girls decreased. This difference in error rate was linked both to the type of ambiguity the children were responding to and their use of cognitive-linguistic devices.

The difference in error rate could not be accounted for either by girls' superior language skills or by the older boys saying more in response to the interview questions. The subjects' standard scores for the *TOWK* assessment showed that for both age groups boys had *more* subtest scores in the high average range than girls (standard scores of 11 and above). Calculating the mean number of transcript pages per subject revealed that boys consistently said more than girls in both age groups and for both stories (*The Puppy Story* and *The Twins Story*). However, it was only the older boys who presented with such a substantial increase in errors and which was specific to *The Puppy Story*.

For girls their error rate remained constant over time for *The Twins Story* but decreased with age for all parts of *The Puppy Story*. For girls, even at age 7 – 8 years the identification and resolution of linguistic ambiguity represented a less demanding task than that of emotional ambivalence. This can be seen when comparing the numbers of errors per story part. For part one of both stories, which contained the non ambiguous information, the error rate was

very similar (112 errors for *The Twins Story* and 118 errors for *The Puppy Story*). In comparison, the error rate for part 2 of *The Puppy Story*, which contained the emotional ambivalence, was higher than for the linguistic ambiguity in part 2 of *The Twins Story* (203 for *The Twins Story* vs. 300 for *The Puppy Story*).

At 10 – 11 years of age the girls' error rate for part 2 of *The Puppy Story* had fallen to 178 errors. This is lower than even that recorded for part 2 of *The Twins Story* at age 7 – 8 years. It is suggested that this was because the older girls were now secure in their ability to resolve emotional ambivalence (i.e. no longer at a transitional stage in their thinking) which resulted in fewer errors of incoherence, hesitancy and syntactic revision. In addition the older girls were shown to use the cognitive-linguistic devices more efficiently, keeping their use for those questions which were most emotionally complex and so preserving their expressive syntax.

In contrast, the boys' error rate increased with age for part 2 of *The Puppy Story*, but like the girls remained constant for part 2 of *The Twins Story* (189 errors vs. 371 errors for *The Puppy Story* and 264 errors vs. 274 errors for *The Twins Story*). This showed that it was the emotionally complex information which posed the challenge for the older boys' expressive language skills. Analysis revealed that they were less efficient at using the cognitive-linguistic devices, using them throughout their responses rather than specifically for the emotionally complex interview questions.

It should also be noted that unlike the girls, the error rate for the boys for part one of *The Twins Story* also increased with age (99 errors at age 7 - 8 years vs. 214 errors at age 10 – 11 years). Differences between the two stories were explored in the Method (Part 1) section of this chapter (pages 126 - 133). The first parts of *The Puppy Story* and *The Twins Story* narratives have the same proportion of simple, compound and complex sentences although the average sentence length is longer for part one of *The Twins Story*. However, more significant in view of the gender discrepancies between the errors rates for the second parts of the stories is the fact that the emotion

portrayed in part one of *The Twins Story* is more complex than that narrated in part one of *The Puppy Story*. It is possible for the twins to be construed as having ambivalent feelings towards the coming of Christmas in part one.

It had been stated in the Method Part 1 (page 131) that it was not anticipated that the children's expressive language would show more performance errors when responding to part one of *The Twins Story* than part one of *The Puppy Story* even though the emotions portrayed are more complex in *The Twins Story*. This was because the structured interview for part one of both stories did not question the children about contradictory emotions. Children, it was claimed, who named ambivalent emotions in the first part of *The Twins Story* were likely to be the older/more mature subjects who would do so spontaneously. Younger, or less mature subjects, would not be developmentally ready to name ambivalent emotions and so would simply name less complex emotions. However, as we have seen, the more complex emotions have a specific and adverse effect on older boys' expressive language skills. Thus the fact that the error rate for boys increased for both part one of *The Twins Story* and part two of *The Puppy Story* provides additional evidence for the sensitivity of the procedures (counting performance errors) to detect increased cognitive and linguistic demands for the two tasks of ambiguity.

Part Two: Summary and Discussion of Main Research Findings

The second study showed that:

- it was possible to identify differences in the cognitive-linguistic skills children used in resolving the two types of ambiguity. *Mental role play* and *metaphor* both played an important part in the children's understanding of emotional ambivalence.
- these differences could be viewed developmentally i.e. certain changes occurred with age.
- gender differences could be identified in the expressive language of children including their use of cognitive-linguistic skills when responding to the structured interview relating to ambivalent emotions. The older boys (10 – 11 years of age) had more recorded instances of performance errors in their expressive language and were less specific in their use of cognitive-linguistic devices for resolving ambivalent emotion.

The identification of specific cognitive-linguistic abilities used for resolving ambivalent emotions as well as the gender differences outlined above, suggests that SLI children will be particularly vulnerable for failure to develop an increasingly mature understanding of these complex emotions. The use of *mental role play* was found to change over time for language normal children. At age 7 – 8 years *mental role play* was significantly related to children's ability to understand and resolve ambivalent emotions. However, this significance did not persist into the older age group. It is likely that the use of *mental role play* is part of a gradually developing and internalised ability to empathise. The older children (10 – 11 years of age) were able to understand and report the feelings of the story protagonist without necessarily having to take on that protagonist's character in an actual role play. This

suggests a more adult like ability to empathise as outlined by the philosopher Peter Goldie in his book *The Emotions. A Philosophical Exploration* (2000).

Goldie believes that empathy and what he calls “in-his-shoes imagining” play a central role in understanding, explaining and predicting the emotional responses of others: precisely the skills required by the experimental task presented to the children in this study. He defines empathy as:

*...a process or procedure by which a person **centrally imagines the narrative** (the thoughts, feelings and emotions) of another person.*
(Page 195, *The Emotions. A Philosophical Exploration*, 2000, author's emphasis).

This process, he goes on to say “necessarily involves bringing to bear in the imaginative process a *characterization* of the narrator” (page 198 *ibid*, author's emphasis). The characterisation of the self as the protagonist in the narrative allows the individual access to revelatory or predictive knowledge of what he or she might actually think, feel and do if they were in such circumstances as well as actually creating certain experiences, including emotional ones, within the individual. In the adult this knowledge and experience occurs internally and can then be verbally reported on. The results of this second study suggests that in younger children (7 – 8 years of age) this characterisation occurs but requires explicit role play in response to the interviewers request for information on the story protagonist's thoughts and feelings. Such explicit role play, it is argued, would be dependant on the child's earlier, pre-school role play skills and experiences.

In typically developing pre-school children role play of observed but not personally experienced activities e.g. police, fire-fighter, is usually established by 3 years of age. (See Patterson and Westby, 1994 for a detailed account of play development in language normal children). At the age of 3 years the child is able to use language to construct well defined temporal sequences in their play and can employ complete sentences with a past tense and future aspect. The child may comment on what they have just done, or what they

will do next. By 3 years 5 months the child is able to attribute emotions and desires to dolls and can use dialogue with meta-linguistic markers to identify character roles in a narrative (e.g. *he said, she said*). At this age words are also used to refer specifically to thoughts and emotions. By 4 years of age there is an increasing ability to use imaginary props rather than object related props in role play situations and language and gestures are used to help set the scene. Cause and effect sequences become more common and language is used to plan and narrate the story using connecting words such as *so, because, but*. Eventually at around the age of 6 years language and gesture can carry the play without props and there is increasing elaboration of planning and narrative story line using sentences with temporal markers e.g.: *then, when, while, before, first, next*.

In the second research study presented in this chapter, the experimental task required children to empathise with a story character in a role depicted in a narrative. While the children were able to draw on any personal experience they might have and use their existing folk psychology to predict how the character would feel, the situation related in the narrative was not one they personally experienced. The ability to understand the situation and the character's feelings from his or her point of view (empathy) can be seen to develop from the child's early role play skills at 3 years when they begin to act out observed events but which are not personally experienced.

For the subjects aged 7 – 8 years the ability to understand and resolve the protagonist's feelings was significantly related to their ability to role play the emotionally salient events of the story from the protagonist's point of view. This role play (*mental role play*) took the form of answering interview questions in the character of the story protagonist, sometimes using mime to convey imagined props/objects.

It is unlikely that language disordered children would have access to the repertoire of early role play skills available to typically developing, language normal children. Catherine Garvey (1984) has pointed out that by the latter part of the third year of life children already have a number of linguistic devices in place which support the development of a coherent script in role

play situations. These include the use of personal pronouns, demonstratives and comparatives (e.g. *same, such, other, else, more*) as referents as well as devices for substitution whereby an expression is replaced by a substitute of the same grammatical class e.g. nominal (*one, ones*) verbal (*do, do so, so it*) and clausal substitutes (*so, not*). Ellipsis, where the child omits some part of what was said before, implicitly alluding to previous information, also makes its appearance in conversation and play. The use of these devices occurring in the pre-school years allows an increasing sophistication in role play which does not have to wait for the acquisition and mature use of more complex syntax, such as the use of later connectives (e.g. *because, but, although*) and clauses. Even at this young age language is the glue which structures children's developing role play abilities and which would significantly disadvantage the child with disordered language development. The development of narrative play as the child gets older requiring more emphasis on causal sequences and time language, as detailed earlier, would also disadvantage the SLI child with their known weakness for the development of temporal language (Wiig, Semel and Crouse, 1973; Moran and Byrne, 1977; Wiig and Semel, 1976, 1984).

Evidence of typically developing children's increasing sophistication in their understanding of narratives and story structure was also found in the data generated by the story containing a linguistic ambiguity (*The Twins Story*). A model for children's developing ability to identify and understanding linguistic ambiguity within a story (specifically pronoun confusion) was proposed analogous to that devised by Donaldson and Westerman for the understanding of ambivalent emotions.

The results of this second study did indeed show children's identification and understanding of linguistic ambiguity becoming increasingly sophisticated as their meta-cognitive and meta-linguistic skills developed. Children's responses to *The Twins Story* became less irrational and idiosyncratic as they were able to apply their increasing knowledge about stories and story structures. Rationale for naming the twin who opened the present became more closely associated with the child's understanding of how stories work or

with specific linguistic knowledge such as word order.

It is open to speculation as to whether this increasingly text-bound and linguistic rationale is the result of increased literacy levels and exposure to written stories and textual analysis, both of which would favour meta-linguistic resolution of linguistic ambiguity within a narrative. In a study by Michaels and Collins (1984) school aged children were asked to re-tell a story in which two men played a part and use of the expression *the man* would be ambiguous. The children in the study employed two strategies for dealing with this problem. Some children used gesture and intonation to distinguish the two men, for example vocal stress fell on the word *man* when it referred to the character that had been mentioned earlier. The second strategy was to use adjectives and relative clauses to distinguish them, for example "*the man who was picking the pears...*" although these strategies are equivalent in an oral context, only the latter is directly applicable to written narrative. Indeed Michaels and Collins refer to the latter strategy as literate-based suggesting that such competence improves with schooling so is likely to be used by older children with more experience of written language.

The findings of Michaels and Collins' study were supported by the responses of the children in this author's second study. Children at the higher levels (2 and 3) for understanding linguistic ambiguity, and who tended to be the older children in the study, would use vocal stress in their re-telling of the story to indicate that **one** of the twins (but by implication it is not know which one) goes downstairs to open the present. Children at the higher levels (2 and 3) when asked how the story could be made less confusing were also able to specify the use of adjectives and clauses to differentiate the twins. Such responses demonstrated the increasing meta-linguistic skills of the subjects as they were able to show a more sophisticated understanding of linguistic ambiguity.

Language normal children thus develop expertise in narrative through play and an increasing knowledge of stories and how stories are structured through listening to them, reading and writing them. The importance of stories

in emotional development has been highlighted by current thinking in philosophy as seen in Peter Goldie's explanation of emotion:

"..an emotion is part of a narrative – roughly, an unfolding sequence of actions and events, thoughts and feelings in which the emotion itself is embedded."

The Emotions: A Philosophical Exploration, 2000.

Since complex narrative is built on increasing linguistic competencies as evidenced in this present study, children with language impairments will become progressively more at risk of delayed or atypical emotional maturation as they fail to comprehend the story in which the emotion is embedded and which gives meaning to the thoughts and actions of themselves and others.

Gender differences revealed in the second study would also disadvantage a language disordered population where the figures for the ratio of boys to girls with specific language impairment are quite consistent and range between two and three to one (Morley, 1972; Silva, 1980). There is also some evidence that in the clinical population boys have a greater vulnerability for language rather than speech difficulties. A study by Broomfield and Dodd, (2004) which monitored referrals to a Community Paediatric Speech and Language Therapy service over 15 months found that boys made up 70% of all new referrals with the proportion higher for language difficulties than speech difficulties. Within the communication impaired population boys thus have the greater risk for linguistic difficulties which affect emotional maturation.

The second study presented in this chapter found that while there were no differences in typically developing boys' and girls' understanding of ambivalent emotion, boys increasingly found it difficult to express that understanding verbally, presenting with a greater number of performance errors in their expressive language at age 10 – 11 years. In addition girls were more selective in their use of cognitive-linguistic devices when

answering emotionally complex questions, including *metaphor*, the most frequently used device when resolving emotional ambivalence. Like temporal language mentioned previously, metaphor, and forms of imagery and analogy can pose particular difficulties for language disordered children (Vance and Wells 1994).

Conclusion

The second research study provided evidence for the specific use of cognitive-linguistic skills by children when resolving ambivalent emotion. In addition it suggests reasons why a language disordered population would be particularly vulnerable for failure to develop these skills and so experience difficulties acquiring more mature forms of emotional processing. The study thus provided a sound basis for investigating language disordered children's responses to the experimental materials and procedures developed by Donaldson and Westerman.

Such an investigation needed to consider ways in which these materials and procedures were adapted to ensure differences in responses were not due simply to the comprehension problems of the SLI subjects. Other factors requiring consideration included the language profiles of the subjects recruited. The age of the youngest language normal subjects, 7 – 8 years, suggested this would be an appropriate minimum language age for the recruited SLI subjects. However, the identification of specific linguistic and cognitive skills by the second study indicated that simply ensuring an overall language age would not provide an adequate comparison to the typically developing subjects. The importance of this third study would be to investigate if the level obtained on Donaldson and Westerman's developmental model of emotional maturation was linked to the presence or absence of the specific cognitive-linguistic devices identified as implicated in the understanding and resolving of emotional ambivalence. Detailed case

histories and information on a range of language processes would be required for each subject.

Chapter 4 now provides an overview of the adaptation of the experimental materials and procedures and the Method used, including subjects recruited, for this third and final study. The results of this study are then outlined together with a discussion of their importance for this clinical population.

CHAPTER FOUR

SPECIFIC LANGUAGE IMPAIRED (SLI) STUDY

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AIM

The aim of this third study was to compare the responses of children with specific language impairments (SLI), when answering questions relating to ambivalent emotions, with those of the typically developing children presented in the second study. Like the second study presented in Chapter 3, the procedures used were based on those established by Donaldson and Westerman's 1986 research looking at typically developing children's understanding of contradictory emotions (emotional ambivalence) and causal theories of emotions (what causes feelings to change).

The second study had compared typically developing children's responses to two different types of ambiguity: emotional and linguistic. This study had identified five cognitive-linguistic devices used when answering the interview questions: *mental role play, metaphor, mime, personal experience and folk psychology*. Differences were found between the two types of ambiguity related to the subjects' use of these devices.

The third study was designed to investigate if:

- SLI children followed the same rate and pattern of development as typically developing children for their understanding and resolution of ambivalent emotions.
- SLI children used the same cognitive-linguistic devices as typically developing children when answering questions relating to emotional ambivalence.
- any differences found between SLI children and typically developing children's emotional understanding could be linked to differences in the children's language skills i.e. those language skills measured by formal assessment as well as the use of those cognitive-linguistic devices already identified in the second, language normal study.

The children selected as subjects for inclusion in this third, SLI study would be children identified with disordered language development. Please see Chapter 1 for a definition of specific language impairment (SLI). Language disordered children present with a range of strengths and weaknesses in their language abilities. By relating these strengths and weaknesses to their responses to stories containing emotional ambivalence further information as to the language skills implicated in emotional development will be suggested.

This third study would use detailed case histories providing information regarding the children's language skills and social and emotional functioning which could be viewed in relation to their ability to understand and resolve emotional ambivalence as measured by Donaldson and Westerman's model of emotional maturation. The complex and interactive relationship between language and emotional development and the multiple factors on which this relationship is built provided the rationale for this use of individual case histories as the basis for this third SLI study. (Please see Chapter 1 for an overview of the current understanding of the relationship between language and emotional development).

A number of studies have looked at the validity of case histories as a method of scientific investigation. Valsiner (1986) explored the use of case studies in psychological research and concluded that:

..the study of individual cases has always been the major (albeit often unrecognized) strategy in the advancement of knowledge about human beings.

Hayes (1981) explored the use of single case data in empirical clinical practice and Blampied et al. (1996) provide a positive review of the effectiveness of single case research designs. The information provided by this method of investigation in this third study was then used to develop questions and hypotheses which could be used in further research studies (Chapter 5).

The following section of this chapter now looks at the adaptations made to Donaldson and Westerman's original experimental materials and procedures for use with these language disordered subjects.

Adaptation of Experimental Materials

The Stories

As the aim of this study was to look at the way SLI children understand ambivalent emotions, only stories relating to those feelings were used i.e. *The Puppy Story* and *The Kitten Story*.

For this third SLI study one of the main considerations was the degree to which the subjects' language difficulties would interfere with their ability to perform the experimental tasks. Subjects were required to listen to an audio tape recorded story and then answer a series of structured interview questions. Both these tasks would place demands on the subjects' verbal memory and receptive and expressive language skills. It was therefore decided to use the two stories written by the American authors Donaldson and Westerman in their 1986 research (*The Puppy Story* and *The Kitten Story*), but with additional picture support provided for one of the stories. These pictures were designed to support the SLI subjects' receptive and expressive language and auditory verbal memory skills.

The Kitten Story had been used in the replication study carried out by this author (Chapter 2). The author was therefore familiar with the use of this story and had acquired data in the type of responses made by typically developing children to the structured interview. As in the original American research, no differences had been found in the British replication between the subjects' responses to *The Puppy Story*, which co-ordinated love/anger and *The Kitten Story*, which co-ordinated sad/happy feelings. However, despite the American researchers' claims to the contrary, differences had been found

between the two stories and the two interviews in terms of length and linguistic complexity. *The Kitten Story* was found to be longer and have a more complex narrative structure. There were also differences in the linguistic complexity of the two stories (see Chapter 2 pages 77 – 79). The structured interview for *The Kitten Story* was also more cognitively demanding, questioning children on single valence emotions as well as ambivalent emotions and contained more questions in total. Please see Appendix 1 which contains the interviews for both *The Puppy Story* and *The Kitten Story*.

The additional complexities offered by *The Kitten Story* and its structured interview suggested that this would be the most appropriate story to support through pictures as it would be the most difficult of the two stories for SLI subjects to access. In addition the second study with typically developing children had used *The Puppy Story* to investigate ambivalent emotions (love/anger). This study therefore provided data which could be directly compared with that of the SLI subjects if it was gathered in an identical manner (i.e. without the use of picture supports). For these reasons it was decided that *The Puppy Story* would be presented following the original American protocols and *The Kitten Story* would be presented with pictures to support verbal memory and receptive and expressive language skills. If the SLI subjects' replies were substantially different when responding to the two stories then further investigation could be carried out to see if this was linked to their receptive and expressive language difficulties or the differences inherent in the two stories/interviews. It was predicted that if the SLI children experienced more difficulties responding to *The Puppy Story* than *The Kitten Story* then this was likely to be due to difficulties understanding the story and interview questions which were presented without any picture supports. This outcome would be unlikely for any other reason because *The Kitten Story* and the structured interview were known to be longer and more complex than *The Puppy Story*.

The following picture supports were provided for *The Kitten Story*:

7 pictures depicting the events in part one of *The Kitten Story*.

7 pictures depicting the events in part two of *The Kitten Story*.

The 14 pictures were used to support the SLI subjects' narrative comprehension skills and auditory verbal memory. The designs of all the pictures used in this third study were initially shown to four Specialist Paediatric Speech and Language Therapists who worked predominantly with language disordered children. All the therapists considered the pictures clearly represented the main events of the story. They also agreed that the pictures should be in colour. This was to emphasise the story narrative since characters' clothes and physical attributes could be represented consistently using the same colours. This emphasised that it was the same character experiencing the events over time. This also meant that the two kittens mentioned in the story (Snowball, the lost kitten, and the second kitten which is given as a birthday present at the end of part two) were made visually distinct. Snowball was drawn as a fluffy white kitten; the second kitten was drawn with short black fur.

Careful consideration was given to the facial expressions of the central story protagonist (Bill). For example, at the end of part two when Bill opens the door to see his new kitten no facial expression is given (Bill's face is drawn in profile). This was to ensure that the subjects were not led to answering questions about how Bill felt at this crucial point in the story by visual information contained in the pictures.

One of the Speech and Language Therapists who had looked at the story pictures informally assessed their accessibility by presenting them to two boys on her clinical caseload. Both boys were able to look at the pictures and tell the main events of the story *without* first being told the story and with minimal adult prompting. The boys, aged 8 years 2 months and 9 years 1 month with language age equivalents of 6 years 1 month and 6 years 3 months respectively (CELF UK3 assessment), were also considered to have some additional learning difficulties in terms of visual and verbal memory skills.

Neither of these boys was subsequently involved with the research in any way.

All the pictures were drawn by a Speech and Language Therapy Assistant. Each story picture card was approximately 15cms by 21cms in size and laminated. Please see Appendix 9 which contains copies of the story pictures used in this study. Please see Chapter 2 pages 31 and 32 for the full texts of *The Puppy Story* and *The Kitten Story*.

The Structured Interviews

The structured interviews written by the American authors Donaldson and Westerman for *The Puppy Story* and *The Kitten Story* were used in this third study. The only changes made to the texts were those already noted in the first and second studies presented in Chapters 2 and 3 i.e. the vocabulary alterations avoiding Americanisms which might have been difficult for British subjects to understand. No other changes or additions were made to the interview for *The Puppy Story* and the questions were identical to those presented to the typically developing subjects in the previous studies.

The interview questions for *The Kitten Story* were also the same as those presented to the language normal children in the first replication study. However, in order to support the receptive and expressive language skills of the SLI children, these questions and possible replies were provided with picture supports. The questions supported were those considered central to the assessment of how the children understood emotional ambivalence, and which could be most difficult for SLI children to understand.

Donaldson and Westerman stress in their scoring manual that the children's responses as a whole must be considered when assigning levels of emotional understanding. However, they also acknowledge in their 1986 paper that an important consideration when scoring the children's transcripts is "*how the subject handled the questions about time (feelings experienced*

simultaneously vs. sequentially) and space (feelings as mixed up or separate) in order to determine whether the child understood that it is possible to have two feelings at the same time toward the same target". The importance of these questions to the level obtained by the child, together with the known difficulties SLI children have with temporal and spatial concepts and labels determined that these questions should be provided with picture support.

The Procedures and Experimental task sections of this chapter contain further information on how the cards were introduced and explained to the subjects. The four Specialist Paediatric Speech and Language Therapists who looked at the story picture cards also looked at the interview picture cards before they were used with the research subjects. It was agreed that facial expression cards representing emotions (see below) should be drawn in black and white as it was felt that colour could be distracting. All the other cards would have colour in them as this could be used to associate different emotions e.g. grey = sad, red = angry and also emphasise, where appropriate, that the questions relate to Bill, the boy in the story, by having the clothes and hair the same colour etc.

The cards which related to the two questions: *Would Bill feel angry and sad at the same time* (Part 1) and *Would Bill feel happy and sad at the same time* (Part 2) had a picture of Bill with two heads, each with the relevant facial expression for the appropriate emotions mentioned in the questions. This design was agreed with the four therapists as the one which was felt would be most accessible to the SLI subjects. Two other designs were considered including one showing Bill with two hearts each in a different colour and with the two emotion words written on them, and one large heart with a mixture of smaller hearts in the two different colours and labelled with the two different emotion words. Both of these two designs were considered potentially confusing by the four therapists as they showed the emotions as separated in the body. All the cards are reproduced in Appendix 9. The cards are now detailed below:

The Kitten Story Interview picture cards

Five black and white facial expression cards were used to support possible feelings the subject might identify in the protagonist (Bill) when questioned about the story. These are: *happy*, *sad*, *angry*, *confused*, and *OK* (neutral feelings). The cards showed Bill's head with the appropriate facial expression. The name of the feeling was also written underneath. A sixth card had no facial expression but just showed a question mark with the words *don't know* written underneath. The cards measured approximately 10.5cms by 13cms and were laminated. All the other cards used to support the interview questions were in colour, A4 size and laminated. The facial expression cards remained on show at all times i.e. throughout Part one and Part two questions. The subject was told he could point to as many cards as he wanted when answering a question and could point to the: *don't know* card if he didn't know the answer to any of the questions.

Part One

The first part of *The Kitten Story* asked the child to identify and co-ordinate angry and sad feelings (same valence emotions). Bill is feeling angry that the window was left open in his bedroom so the kitten escaped and sad that he no longer has the kitten. When asked how Bill is feeling in the story the subject could spontaneously say both feelings or point to the two relevant emotion cards. If only one feeling was mentioned or indicated by the subject then the protocols allowed the interviewer to prompt the child by asking if Bill could be feeling anything else.

Having elicited from the subject that Bill feels angry and why he feels angry the subject was then asked who Bill feels angry at. If necessary the subject was encouraged to look at the story picture cards and to point to the relevant characters (Bill, mother, kitten). If more than one character was indicated by the subject then as part of the protocol he was asked who Bill feels most angry at. Again the subject was encouraged to look at the story cards and

point if there was no verbal response or the subject was struggling to express his answer.

The question: *Would Bill feel angry and sad at the same time or first one and then the other?* had 3 support picture cards which were laid on the table in front of the subject as the question was asked. The picture relating to experiencing the feelings at the same time showed Bill with two heads. One had an angry facial expression and one had a sad facial expression. The phrase *same time* was written at the bottom of the picture. When the interviewer said *or would he feel first one and then another* a picture of Bill looking angry (with *angry* written at the bottom) and then another picture of him looking sad (with *sad* written at the bottom) was put on the table in front of the subject. This way of presenting the pictures conveyed the notion of time (*first one and then the other*) to the SLI subject. The subject was then encouraged to either say or point to the relevant picture(s).

The question: *Do the angry feelings mix together with the sad feelings or do they stay separate?* was supported by 2 picture cards. The *mix together* card showed the outline of a body with a large heart shape inside it. Inside the heart was a red and grey spiral of mixing feelings. The grey sad feelings and the red angry feelings had the word *sad* and *angry* written on them. The *stay separate* card had the outline of a body cut in half. One side was coloured grey and the other side was coloured red. The grey side had the word *sad* written on it and the red side had the word *angry* written on it. The subject was asked to say or point to the relevant picture.

The question *When Bill is angry do the sad feelings go away?* had one picture support card. This had the outline of a body with an angry facial expression. Inside the body was a series of heart shapes. These decreased in size and passed outside the body with an arrow indicating away. Each heart was coloured grey and had a small picture of a sad face and the word *sad* written underneath.

Part Two

The second part of *The Kitten Story* asked the child to identify and co-ordinate sad and happy feelings (ambivalent emotion). Bill is feeling sad that he has lost his kitten Snowball and happy when he is given a new kitten. The subject was asked to say how Bill is feeling either by verbalising the response or indicating the relevant facial expression cards. If only one emotion was indicated the protocols allowed the subject to be prompted by the question:

Could Bill feel anything else along with being X?

The interview questions supported by pictures were the same as those supported in Part one except relating to sad and happy feelings and not sad and angry feelings i.e.:

Would Bill feel happy and sad at the same time or first one and then the other?

Do the sad feelings mix together with the happy feelings or do they stay separate?

When Bill is happy do the sad feelings go away?

The support pictures were also identical except depicting sad and happy and not sad and angry feelings. The sad feelings continued to be coloured grey and the happy feelings were coloured yellow.

Adaptation of Experimental Procedures

Changes to Subject Selection Criteria

The original criteria used for the selection of the typically developing children were that they had no identified behavioural difficulties, no history of recent trauma (within the previous 12 months, such as parental divorce) or persisting emotional problems, no current or past identification of a speech and/or language impairment, had as a minimum low average range of verbal and non verbal skills, and were from mixed socio-economic backgrounds. The subjects also had British English as their only language experience. A number of changes to these criteria were made for the SLI subjects. These are now detailed.

The association between language impairments and emotional and behavioural difficulties, as detailed in Chapter 1, meant that it was unrealistic to expect to find SLI subjects who did not exhibit difficulties in social and emotional functioning. Indeed, the whole premise of this thesis is that disordered language development will have an adverse effect on emotional development.

For the purposes of this study it was necessary to exclude subjects who presented with emotional, behavioural or psychological difficulties which were considered additional to the initial language impairment, exacerbated by other environmental or psychological factors or could prevent them from completing the experimental tasks. For this reason it was decided that SLI subjects were only considered for inclusion in the study if their social and emotional difficulties had *not* been sufficient to have caused:

- referral to outside agencies such as Child and Adolescent Mental Health teams (CAMHS) including clinical psychology, psychotherapy, psychiatry, and Family Therapy or Education Behavioural Support teams and Education Welfare Officers.

- part or permanent exclusion from education.

In addition, children who had been fostered or adopted were excluded from the study due to the known increased incidence of emotional and behavioural difficulties in looked after children (McIntyre and Keelser, 1986; Bamford and Wolkind, 1988; Dubowitz et al., 1990; Thompson and Fuhr, 1992; Urquiza et al., 1994; Garland et al., 1996; McCann et al., 1996). Factors known to cause high risk of emotional or psychological difficulties in children such as alcohol or drug dependent primary carers, or known cases of abuse: emotional, psychological, physical or sexual, were all screened through access to case history records and excluded from the study. Children with illnesses which had resulted in hospitalisation were also excluded due to the regressive effect illness and hospitalisation can have on emotional development (Lipian, 1985; Harris and Lipian, 1989). The same criterion regarding recent trauma which was applied to the language normal subjects (no history of recent trauma i.e. within the previous 12 months, such as parental divorce) was also applied to the SLI subjects.

Subjects were only included in this third study if they presented with a diagnosis of specific language impairment by a Speech and Language Therapist and they had been seen by an Educational Psychologist or similar professional who had assessed their non-verbal cognition as at least within the low average range for their chronological age. As an additional means of excluding more generalised learning difficulties all subjects selected had at least one core receptive language subtest score and one core expressive language subtest score within the average range for their chronological age as measured by standardised formal assessment by a Speech and Language Therapist. The language information had to be current i.e. assessment had to have taken place within at least 6 months of the experimental tasks. Further information is given on this in the Method section of this chapter under the heading "Subjects" (page 326).

Subjects selected had no present or past history of phonological difficulties or fluency disorders or additional conditions such as ADHD (Attention Deficit

Hyperactivity Disorder) or where the language impairment was known to be part of a wider syndrome. Children with a diagnosis of Autistic Spectrum Disorder or Semantic Pragmatic disorder were also excluded.

Socio-economic class had not been found to be associated with typically developing children's performance on the experimental tasks either in the original American study (1986), the first British replication study (Chapter 2) or the second language normal study (Chapter 3). The SLI subjects were therefore not selected by socio-economic class. All the SLI subjects had British English as their only language experience. This was consistent with the language normal children in the first and second studies.

As part of the recruitment criteria subjects were initially required to have a Total Language Age of 7 years or more as assessed by the *Clinical Evaluation of Language Fundamentals Third Edition (CELF UK 3)*. This assessment was the standard language assessment used by the Speech and Language Therapy Districts contacted in connection with subject recruitment. An age of 7 years was selected since this was the chronological age of the youngest typically developing children who took part in the second study (Chapter 3). It is recognised that the use of age equivalents can be highly misleading, especially in profiles of disordered language development where there can be large differences between individual subtests scores. The age equivalent criterion was used as an initial means of recruiting subjects most likely to be suitable for the third study and able to complete the experimental tasks.

Subjects were also required to pass an assessment of their understanding of the following concepts which were included in the structured interview questions: *same, different, same time, first one and then the other, separate, mix together*. The rationale for this criterion is explored in the next section.

Changes to American Procedures (Language Normal Study)

The following changes were made to the American protocols established by Donaldson and Westerman in their 1986 research:

- Exclusion of American vocabulary.
- Stories were audio tape recorded by children of the same age and sex as the subject.
- Subjects were video recorded.
- Language assessment of all subjects after the experimental tasks had been completed using selected subtests from the *Test of Word Knowledge (TOWK)*.

These changes have already been detailed in Chapter 3 page 148.

Changes to American Procedures (SLI Study)

In addition to the above changes the following procedures were also incorporated into this third study:

- Subjects' receptive and expressive language skills were assessed using the *Clinical Evaluation of Language Fundamentals Third Edition (CELF UK 3)*. This was carried out prior to the commencement of the experimental tasks.
- Subjects' understanding of the concepts: *same, different, same time, first one and then the other, separate, mix together* was assessed prior to their carrying out the experimental tasks.

- The presentation of *The Puppy Story* and *The Kitten Story* were not counterbalanced.
- Further analyses of the typically developing and language impaired children's use of *metaphor* and *mime*.
- The completion by parent(s) and a member of school staff of questionnaires designed to provide information on the subject's social functioning. This was carried out after the subject had completed all the experimental tasks and language assessments.
- Interviews conducted by the researcher with parent(s). This was carried out after the subject had completed all the experimental tasks and language assessments.

These additional procedures are now detailed:

Language assessment of SLI subjects using the CELF UK 3

One of the recruitment criteria for the selection of possible subjects was that they should have a Total Language Age equivalence of 7 years or more on a standardised assessment. This should also include one core receptive language subtest score and one core expressive language subtest score within the average range for their chronological age (i.e. standard scores between 7 – 13). The assessment chosen to provide this information was the *Clinical Evaluation of Language Fundamentals Third Edition (CELF UK 3)*. This assessment is widely used by Speech and Language Therapists and was the standard language assessment used by the Speech and Language Therapy Districts from which the subjects were recruited.

The assessment, devised by Eleanor Semel, Elisabeth Wiig and Wayne Secord, (third edition revised and produced in 2000), is an individually administered assessment designed to aid identification, diagnosis and

intervention of language skills deficits in school-age children, adolescents and young adults. It provides information on language content and form specifically word meaning (semantics), word and sentence structure (morphology and syntax), as well as the recall and retrieval of spoken language (memory). Subjects were assessed using the 6 core subtests, 3 which assess receptive language skills and 3 which assess expressive language. Raw scores from the subtests can be used to calculate norm referenced standard scores.

In addition to the 6 core subtests 2 additional supplementary subtests were also administered: *Listening to Paragraphs* and *Word Associations*. It was decided to administer these two supplementary subtests as they provided additional standardised information on skills the subjects required in the experimental tasks. The *Listening to Paragraphs* subtest provided information on the subjects' ability to understand and respond verbally to short spoken narratives. The *Word Association* subtest provided information on word storage and retrieval processes which could affect word finding and fluency in spoken conversation and when answering questions. As the subjects' suitability for inclusion in the third study was dependent on scores obtained in the *CELF UK3* assessment, the test was administered before the experimental tasks were presented.

Assessment of SLI subjects' conceptual understanding

In order to respond to the structured interviews for *The Puppy Story* and *The Kitten Story* it was necessary for subjects to understand the following concepts which were integral to key interview questions: *same, different, same time, first one and then the other, separate, mix together*. This understanding, which formed a part of the subject selection criteria, was assessed before presentation of the experimental tasks and in the following ways.

The basic concepts *same* and *different* occur in a number of interview questions in both part one and part two of *The Kitten Story*. For example:

Part One

Are angry and sad the same?

How are they different?

Do they feel different inside?

Do they look different on somebody's face?

Part Two

Would Bill feel differently about the new kitten if he had never had Snowball and lost her? How?

Would you feel the same as Bill or different?

It was therefore important that potential subjects' understanding of these concepts was assessed before they took part in the experimental tasks.

These concepts were assessed using the *Clinical Evaluation of Language Fundamentals - Preschool (CELF – Preschool)*. This assessment is standardised for the age range 2 years 11 months to 6 years 11 months. It was therefore outside the age range of the subjects recruited for this third study. However, as the aim was to check qualitative understanding rather than obtain quantitative information, it was considered suitable for the purposes of this study. The test consists of a page showing three circles, one contains two fish which look the same, and the other two circles show fish (two in each circle) which are different. The child is asked to *point to the ones which are the same*. The test for *different* has three circles, two circles each contain three dogs which look the same and the third circle has three different looking dogs. The child is asked to *point to the ones which are different*.

To assess the temporal concepts: *same time* and *first one and then the other* the researcher told the child that she was going to tap the table with her hands. The child was instructed to watch the researcher and then say if she had tapped the table with her hands *at the same time* or *first one and then the other*. This was repeated three times. A 100% success rate was required as part of the subject selection criteria.

To assess the spatial concepts: *separate*, and *mix together* three pictures were drawn by the same Speech and Language Therapy Assistant who drew *The Kitten Story* support pictures. One picture showed an empty bottle. The other two pictures showed a coloured liquid poured into a bottle containing a different coloured liquid. In one picture the colours remained separate and in the other picture the colours mixed together. The pictures were drawn A4 size and laminated. The child was told he would be shown three pictures: one that showed an empty bottle, one that showed coloured waters staying separate in a bottle and one that showed coloured waters mixed together in a bottle. The pictures were placed in front of the child and the child was then asked to point to: *the colours in the bottle that are separate*, *the empty bottle* and *the colours in the bottle that are mixed together*. Each instruction was given separately. Only subjects who were able to successfully comply with these requests were selected for inclusion in the study.

The receptive testing of the concepts *separate/mixed together* (i.e. the child is asked only to point and not to name) reflected the experimental task which occurred in the research. In the structured interviews for both *The Puppy Story* and *The Kitten Story* the child was asked if the emotions (love/anger and happy/sad) stay separate or mix together. The child was not asked to conceptualise and express this himself.

The decision to use liquid in a container to depict the concepts was supported by current understanding of the role of metaphor in the processing and expression of emotion. Kovescses (2000) has argued that the image of the body as a container with emotions viewed as a fluid or sometimes a gas is pervasive in human thought and language:

In many ways this (the body as container) is the major metaphorical source domain for emotions. This seems to be a near-universal way of conceptualizing the body in relation to the emotions.

(Metaphor and Emotion page 37)

And later:

As linguistic usage indicates...cultures seem to conceptualize human beings as containers and anger (or its counterparts) as some kind of substance (fluid or gas) inside a container.

Ibid. page 146

Examples of such metaphors are numerous:

She was filled with happiness

His anger boiled over

She was full of sadness

He filled with pride when he saw...

Her joy overflowed

He could no longer contain his hatred

One of the younger typically developing boys in the second study (Chapter 3) spontaneously referred to Mike in *The Puppy Story* as being so angry that steam came out of his ears (a common cartoon image of a common metaphor for extreme anger).

Since the SLI children would be expected to understand the concepts *separate* and *mixed together* metaphorically when relating to emotions it seemed logical to present them as near as possible in this analogous form for testing (liquids in a container).

One further consideration affected the drawing of the pictures. In the physical world mixing colour produces colours different from the originals e.g. red and

blue produce purple and blue and yellow produce green. In the picture of the mixed together coloured water the colours swirl together but remain distinct. This was because firstly, it was felt that the physics of colour would be too abstract to expect the subjects to understand and apply when testing comprehension of the concepts *separate* and *mixed together*. The visual depiction of colours swirling round each other would be easier to relate to *mixed together* than the creation of a different colour altogether. Secondly, the analogy with emotion holds more securely since the mixing of love and anger or sadness and happiness does not produce a completely different third emotion. The picture testing the concept *mixed together* was thus drawn visually similar to the picture showing the two contradictory emotions *mixed together* in the body of the story protagonist which was used to support the structured interview. It was hoped that this might aid the SLI subjects' understanding of how the concepts were being applied to emotion.

Presentation of stories (story order)

In the American research, the British replication (Chapter 2) and the second study (Chapter 3) the order of presentation of the stories was counterbalanced. This did not occur in this third study. For this SLI study *The Puppy Story* was always presented first.

The Kitten Story was supported by pictures. This was to see if the subjects' language deficits were impacting on their ability to respond to the questions. However the questions relating to emotional ambivalence and emotional causality were identical in the two stories, even though the context was different. If *The Kitten Story* was presented first it was possible that some of the subjects' responses, and the way in which they understood emotional ambivalence, could have been initially primed by the pictures. This story was therefore always presented second. This meant that the SLI children's responses to *The Puppy Story* could be directly compared to those of the typically developing children.

It is recognised that this is not ideal. Subjects could have been more anxious during the first session when they were still unsure of exactly what to expect

and this could have affected the way in which they responded to questions. The possibility of supporting *The Puppy Story* with pictures and then counterbalancing the presentation order and which story was shown with pictures was considered. However, it was decided that the small subject numbers for this third study precluded this approach: the introduction of more variables into the study would have made it very difficult to compare the SLI data with that of the typically developing children.

Analyses of typically developing and language impaired children's use of *metaphor* and *mime*

Data analysis was carried out to identify the language impaired children's use of the five cognitive-linguistic devices noted in the typically developing children's responses to interview questions (*mental role play, metaphor, mime, personal experience* and *folk psychology*). This analysis followed the same procedures detailed in Chapter 3 and provided data on the number of devices used and when they were used (i.e. for which parts of the story interview).

An additional level of analysis was then carried out which categorised the type of *metaphor* and *mime* used by the typically developing and language impaired children. This allowed both quantitative and qualitative differences to be identified in the two groups. An explanation of the categorisation system used is provided in the Method section of this chapter page 373.

The use of parent and school staff questionnaires

Three questionnaires were used in order to provide information on the subjects' emotional development and social behaviours as perceived by adults close to the child. One questionnaire was given to teaching staff to assess the child's social competencies in a school setting with adults and peers. The questionnaire chosen was based on the *Achenbach Teacher's Report Form For Ages 5 – 18* (1991).

The *Achenbach Form* is an American assessment tool and was chosen in consultation with the local Exeter Educational Psychology Service who used it

as their preferred method of gathering detailed information from teaching staff on pupils' emotional and behavioural difficulties in school. The questionnaire provides information on the child's current academic performance in school, the nature of any difficulties they have with learning, their presentation within class and their social skills with adults and peers. Minor changes were made to the questions relating to the American vocabulary, for example the word *grade* was replaced with *year*. Questions outside of the remit of this study were omitted.

Parent(s) were asked to complete *The Pragmatics Profile of Everyday Communication Skills in School-Age Children* by Dewart and Summers (1995). This profile is used extensively with parents by Speech and Language Therapists and was in current use in both of the Speech and Language Therapy Departments from which the subjects were recruited. *The Pragmatics Profile* comprises four sections: Communicative Functions (e.g. requesting, giving instructions, and narrative), Response to Communication (e.g. understanding indirect requests, meta-linguistic awareness, and negotiation), Interaction and Conversation (e.g. interest in interaction, conversational repair) Contextual Variation (e.g. use of language in play, peer interaction, compliance with social conventions). Neither questionnaire had previously been used in connection with the children used in this third study.

Parents were also asked to fill out a *Parent's Report Form*. This was based on the *Achenbach Teacher's Report Form* and covered the same questions from the parents' perspective. This allowed the responses of the school staff and parents to be cross referenced to see if a similar view was held by the parents and the professionals of the child's social and emotional presentation. Copies of the *Achenbach Teacher's Report Form* and the *Parent's Report Form* are given in Appendix 10.

Verbal interviews with parents

The researcher spoke separately to the parent(s) and the member of the school staff who completed the *Achenbach Form*. This was to gather informal information on the child's emotional development and social competencies

within the family and home. Meeting with the school staff gave opportunity to clarify comments made concerning the child's social presentation covered by the questionnaire. Pencil notes were made by the researcher during the interview with the permission of the interviewees. The interview with parents took place after they had viewed the video of their child and was based around four questions created by this author:

- How accurate a reflection do you feel the video is of your child's abilities?
- If you had to put an age on your child's social and emotional development what age would that be?
- Do you have any present concerns regarding your child?
- How do you see your child's future?

Transcription of Subject Interviews

For this third study the researcher made verbatim transcripts of the subjects' audio and video taped interviews. Each subject had two transcripts: one for *The Puppy Story* and one for *The Kitten Story*. The transcription conventions were the same as those used in the second study and are explained in Chapter 3.

A Senior Speech and Language Therapist who had provided interrater reliability measures for the second study checked the accuracy of the transcriptions using the audio and video tapes. No significant discrepancies were found by this therapist and only three minor revisions relating to the phonetic transcription of vowel sounds were made.

Appendix 11 contains two pages as an example of the transcript of one of the SLI subjects. This particular subject presented overall with the severest language impairment. The particular two pages chosen also contain a number of examples of the cognitive-linguistic devices used by this subject.

Analysis of Subject Interviews

Subjects' understanding of emotional ambivalence and emotional causality (what causes emotions to come and go) was analysed according to the system devised by Donaldson and Westerman (1986). This system has been extensively described in Chapters 2 and 3. The same criteria applied to the language normal data was used to assign levels to the SLI transcripts. Appendix 3 contains the profiles written by the American authors used to define the ambivalence levels.

The children taking part in this third study all had a diagnosis of specific language impairment (SLI). The discourse and expressive language analysis conducted with the typically developing children in the second study was therefore *not* performed on this SLI data.

Analysis was carried out to identify cognitive-linguistic devices used by the SLI children and which corresponded to those used by the language normal children. Specifically these were: *mental role play, metaphor, mime, personal experience and folk psychology*. Examples of these five devices taken from the language normal data are provided in Appendix 6. The identification and scoring methods were the same as those used in the language normal study (Chapter 3).

METHOD

Ethical considerations

Similar ethical issues related to this third SLI study as to the previous language normal studies. However, there were additional considerations specific to this study with language impaired children.

- To ensure that language impaired subjects gave informed consent to taking part in the research.
- To ensure that language impaired subjects were able to understand the American debriefing procedures which protected subjects' wellbeing.
- Issues of confidentiality were dealt with differently in this third SLI study than in the American study or the two previous British studies.
(Specifically parents were shown the videos of their child and this was made clear to the SLI subjects at the start of the research).
- Experimental findings might increase parents' anxieties concerning their child's social and emotional development.

These issues are detailed in Appendix 7.

Recruitment

A total of 4 specific language impaired boys were recruited for this third study. Recruitment of the subjects was through local Speech and Language Therapy Services. The Head of the Exeter and District Speech and Language Therapy Service (the researcher's employing service) was happy to allow subjects to be recruited from patients known to therapists in this area once ethical approval had been granted. An information sheet giving selection criteria was therefore circulated to all paediatric therapists.

In order to obtain as many potential subjects as possible two neighbouring Speech and Language Therapy Services were also contacted in North Devon and South Devon (Torbay). The researcher wrote a letter to the Head of each Service, together with an information sheet on the research and a copy of the letter that would be sent to parents of children identified as possible candidates. The researcher explained that Ethics approval had been granted by Exeter and that an application would be made to the other local ethics committees should potential subjects be identified in their areas. Both Heads of Service were happy to co-operate with the research and copied the information sheets to all the relevant therapists in their districts.

In order to ensure the suitability of children put forward as potential subjects, one of the selection criteria was that they should have a total language age equivalence of at least 7 years as measured by the *CELF UK3* assessment. This meant potential subjects were likely to be at the top end of primary education or secondary school age. All the Speech and Language Therapy Services in the area, including the researcher's own, discharged children on entry to secondary education as no service for older children in mainstream education was provided in the region. There were also no Language Units attached to mainstream secondary schools in the area. The researcher therefore also contacted the Devon Educational Psychology service which did provide a service to older children and might have been aware of possible subjects no longer under the care of a Speech and Language Therapist.

Despite the number of services contacted only four potential subjects were made known to the researcher. These were all boys. Two were in secondary education, but their previous therapists felt they would meet the criteria: one of them was from the Exeter locality and one from South Devon. Discussion with Speech and Language Therapy colleagues revealed that children who met the language age criteria, but were still on clinical caseloads, tended to have additional identified difficulties such as ADHD or Autism. Discussion with Educational Psychologists known to the researcher showed that they were unsure of the language ages of the children known to them and therefore unwilling to make them known to the researcher in case they were subsequently found to be unsuitable. There was also some confusion between the terms specific language impairment (SLI) and specific learning difficulties (dyslexia).

Due to time constraints it was not practical for the researcher to consider contacting other services either in Cornwall, Somerset and Dorset or outside of the South West. The aim of this third study was to present detailed case histories and language profiles and then look at the children's responses to the interviews and their understanding of emotional ambivalence in relation to the typically developing children already studied. For this purpose, four children were considered an acceptable subject number.

It is acknowledged that the gender differences identified in the language normal children (Chapter 3) could not be explored in this single sex SLI group. It was felt that the inclusion of female SLI subjects in this third study would have introduced too many variables. Specific language impairment is also a condition which affects more boys than girls (page 294).

The Speech and Language Therapists who had identified the potential subjects contacted the parents themselves to see if they were happy to be approached by the researcher. The parents of all the four subjects then gave their permission for their children to be seen by the researcher. One of the four children did not achieve a total language age score of 7 years when subsequently assessed by the *CELF UK3*. He obtained a total language age

of below 6 years 0 months (the basal age for this assessment). However, he did fulfil all the other subject criteria including achieving one receptive language subtest score and one expressive language subtest score within the average range for his age. It was therefore decided to let his inclusion in the research stand. This would allow for comparison with the youngest typically developing children (4 – 5 years) in the first replication study (Chapter 2).

Subjects

Four boys with specific language disorders participated in this study. The ages of the boys were as follows: 13 years 2 months; 11 years 9 months; 9 years 10 months; 9 years 3 months. All the boys were currently attending mainstream schools although 3 of the 4 subjects had previously attended specialist Language Support Units: one in South Devon and two in Exeter. One of the children had attended a Child Development Centre as a preschool child before transferring to a Language Unit.

Three of the boys had been referred to the Speech and Language Therapy service as preschool children and one as a school age child by the school's Special Educational Needs Co-ordinator (SENCo.). Two of the children were currently under the care of the Speech and Language Therapy Service and two had been discharged on their entry to secondary education.

Two of the children had parents who were married and still living together. One child's parents were divorced. He lived with his mother and had regular access to his father. His mother was in a long term relationship but this did not constitute a live-in relationship. The other child's parents were separated. He lived with his mother and her new partner but saw his father at weekends. This mother was in a long term relationship and there was a second child (half brother to the subject). Both mothers described their relationship with their ex-partner as amicable.

The criteria used for the selection of subjects were that they had:

- A diagnosis of Specific Language Impairment (SLI) with no present or past history of phonological difficulties or fluency disorders or additional conditions such as ADHD (Attention Deficit Hyperactivity Disorder) or where their language impairment was known to be part of a wider syndrome including Autistic Spectrum Disorders.
- Had been seen by an Educational Psychologist or similar professional who had confirmed at least low average non-verbal cognitive abilities. Children with generalised learning difficulties were excluded from the study.
- A Total language age of at least 7 years 0 months with one receptive subtest score and one expressive subtest score within the average range for their chronological age, as measured by the *Clinical Evaluation of Language Fundamentals Third Edition (CELF UK 3)*. This was in order to screen for children with general learning difficulties. (This criterion was amended to include one subject whose Total language age was less than 7 years 0 months. See page 343).
- No severe emotional or behavioural disorders characterised by referral to outside agencies such as Child and Adolescent Mental Health teams (CAMHS) including clinical psychology, psychotherapy, psychiatry, and Family Therapy or Education Behavioural Support teams and Education Welfare Officers, or had experienced part or permanent exclusion from education.
- No history of recent trauma (within the previous 12 months) such as parental divorce or family bereavement.
- British English as their only language experience.

The experimental procedures involved the children listening to audio taped stories read by a child of the same age and sex as the subject. Recordings of *The Puppy Story* and *The Kitten Story* were therefore made by 3 boys aged 13 years, 11 years and 9 years. The readers recruited were children whose parents were colleagues of the researcher. All three children had been referred to in their school reports as good achievers and by their class teacher as having reading abilities within the high average range. All three readers had British English as their only language experience.

The following is a synopsis of the SLI subjects' clinical histories. The standard scores and age equivalents obtained on the *CELF UK 3* language assessment prior to the start of the experimental procedures are given at the end of each synopsis. Details of the *TOWK* scores are also given. This assessment was administered after the completion of the experimental tasks. This follows the protocols established for the typically developing children in the second study (Chapter 3). The scores for both assessments are presented together for ease of comparison since they provide information on the subjects' individual linguistic strengths and weaknesses. A summary of the information obtained for each subject from the parent interviews is provided in Appendix 12. Information from the parent interviews and parents and school questionnaires is summarised in tabular form at the end of this section.

Information on subjects is presented in chronological order (eldest first). To preserve anonymity initials only are used to refer to individual subjects.

Name: JD

Chronological age: 13 years 2 months

Youngest of 2 boys. Referred to Speech and Language Therapy Service by Health Visitor at age 2 years 2 months. No recognisable words, jargon only. Unable to respond to single words including own name. Poor pre-linguistic skills: e.g. eye contact, shared attention. Very limited play skills and poor social interaction. Evidence of frustration, communicated mainly through screaming. Referred on to local Child Development Centre.

Attended Child Development Centre (CDC) for 2 years: rapid development of eye contact and attention skills. Initial assessment by a Clinical Psychologist using the *Griffiths Mental Development scales* showed abilities within the average range for his age apart from Personal/Social Development and receptive and expressive language (Hearing and Speech). Long term difficulties with developing independent play, shared play, imaginative play, and social interaction skills with peers. Due to poor social skills received 1:1 support in mainstream playgroup. This was in addition to his attendance at the CDC. Continued severe difficulties with receptive and expressive language. Statement of Special Educational Needs with a diagnosis of specific language disorder. Mother reported continued concerns regarding social and emotional behaviours which placed considerable strain on family life. (Parents later divorced with Father and eldest son living apart from, but in contact with, mother and JD).

At age 4 years 10 months transferred from CDC to local Language Unit. Assessed by Specialist Speech and Language Therapist using Reynell Developmental Language Scales: chronological age 4 years 10 months; receptive age equivalence 2 years 10 months; standard score: below basal for assessment. Attended the Language Unit for 2 years. Made good progress in all areas. Assessed by Educational Psychologist prior to leaving Language Unit using *WORD (Wechsler Objective Reading Dimensions)*, *British Ability Scales Basic Number Skills test* and the *WIPSI – Revised (Wechsler Pre-School and Primary Scales of Intelligence – Revised)*. Non verbal skills within

the average range for his age including literacy (decoding) and numeracy. Continued difficulties with reading comprehension. Assessed by Specialist Speech and Language Therapist using *Clinical Evaluation of Language Fundamentals – UK Revised (CELF UK R)*. Receptive language score: 83 (average range 85 – 115) percentile rank: 13. Expressive language score 62 (average range 85 – 115) percentile rank: 1. At chronological age 7 years 2 months obtained Total language age equivalence of 6 years 0 months. Supplementary subtests also administered: *Listening to Paragraphs* subtest standard score 13 (average range 7 – 13); *Word Association* subtest standard score 6 (average range 7 – 13).

Transferred to local mainstream primary school at age 7 years 5 months. Said by school staff to have integrated well. Very good at sports. Developed friendships and popularity through excellent football skills. Continued difficulties with imagination as reported by teaching staff. Behaviour difficulties in class if unsupported by adult. Continued under the care of Speech and Language Therapy. Intervention in the form of school based language programme delivered by Teaching Assistant and closely monitored by Specialist Speech and Language Therapist.

At age 11 years transferred to local mainstream secondary school. Transfer review at age 10 years 9 months by Educational Psychologist noted JD as a very nervous and anxious boy who looked younger than his peers and with fragile self-esteem in learning but a popular football team member. Assessed using *Wechsler Intelligence Scale for Children (WISC 111 R/UK)*, *WORD* and *Wechsler Objective Numerical Dimensions (WOND)*. Scores for non verbal skills within the general average range but with particular weaknesses with visual sequencing and object assembly. Assessed by Specialist Speech and Language Therapist using *CELF UK R*. Receptive language score 97 (average range 85 – 115) percentile rank 42; expressive language score 72 (average range 85 – 115) percentile rank 3. At chronological age 11 years 2 months obtained total language age equivalence of 9 years 1 month.

Speech and Language Therapy intervention ceased on entry to secondary education.

Language Assessment prior to commencement of research study

Clinical Evaluation of Language Fundamentals: Third edition. (CELF UK 3)

JD obtained an overall receptive language score of 79 (average range 85 – 115). Percentile rank 8.

JD obtained an overall expressive language score of 77 (average range 85 – 115). Percentile rank 6.

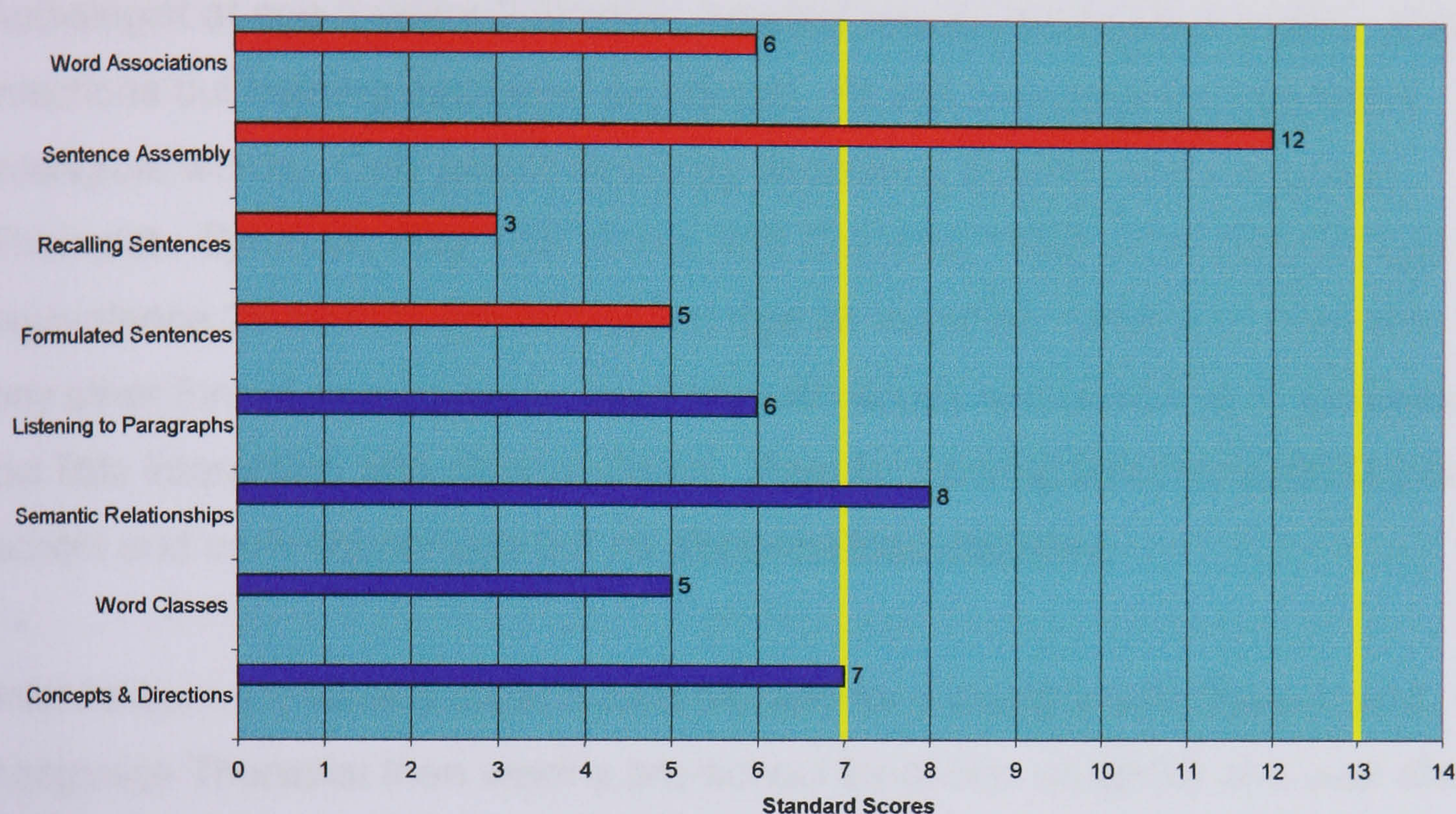
JD obtained a Total (i.e. receptive plus expressive) language score of 73 (average range 85 – 115). Percentile rank 4.

At chronological age 13 years 2 months, JD obtained a receptive language age equivalence of 7 years 8 months and an expressive language age equivalence of 6 years 7 months. His overall total age equivalence was 7 years 7 months.

Bar Chart 1: CELF subtest standard scores for subject JD

Expressive subtests are in red and receptive subtests are in blue.
Lines in yellow indicate the average range for standard scores (7 – 13).

Bar Chart 1 showing CELF subtest standard scores for subject JD aged 13 years 2 months

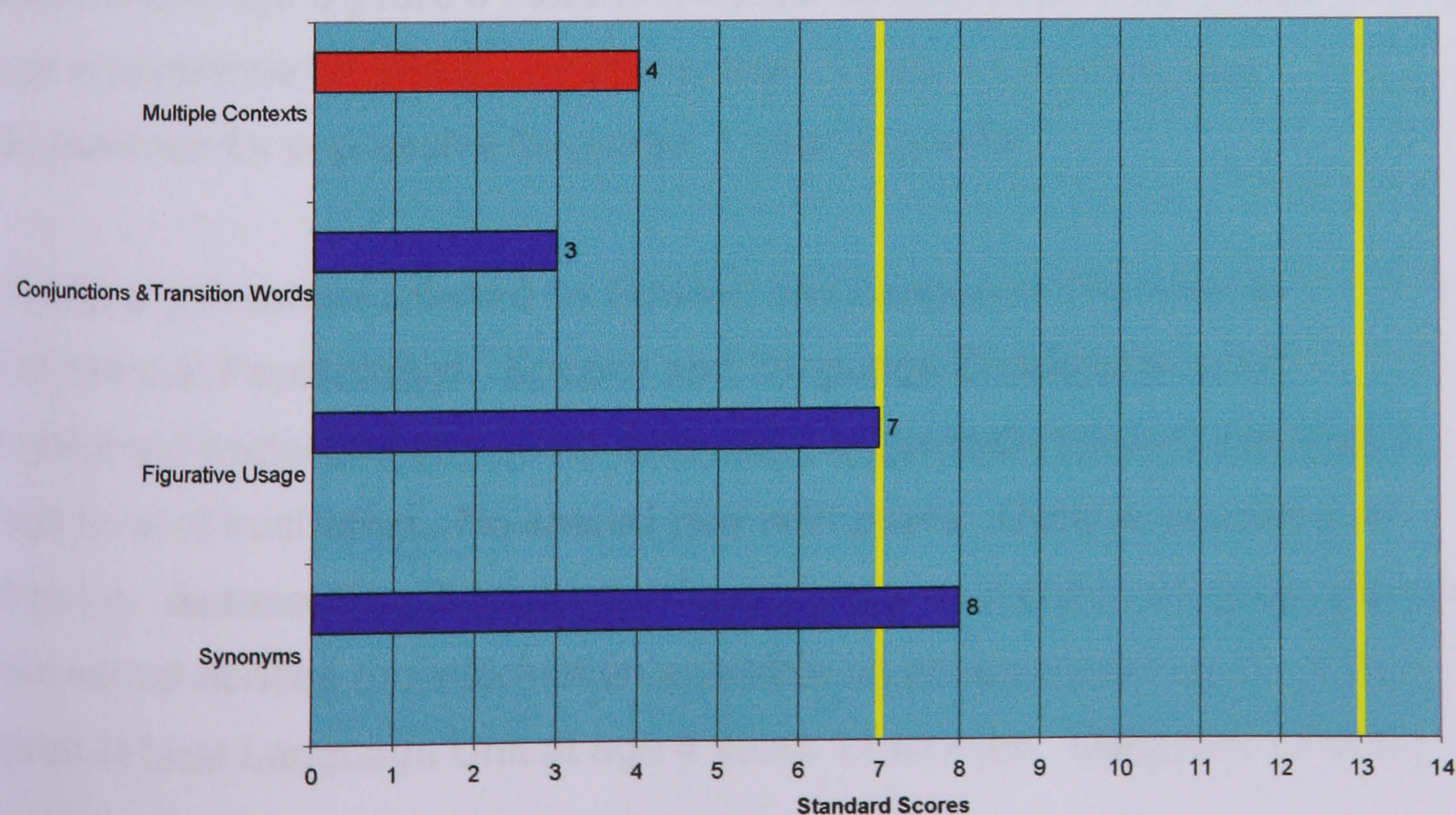


Language Assessment administered after completion of experimental tasks (*TOWK*)

Bar Chart 2: TOWK subtest standard scores for subject JD

Expressive subtests are in red and receptive subtests are in blue.
Lines in yellow indicate the average range for standard scores (7 – 13).

Bar Chart 2 showing TOWK subtest standard scores for subject JD aged 13 years 2 months



Name: AB

Chronological age: 11 years 9 months

Youngest of 2 boys. Referred to Speech and Language Therapy Service by Audiologist at age 2 years 2 months: hearing assessment due to history of ear infections but hearing assessed as normal. At this time parents reported 5 intelligible words. Only jargon heard by assessing Speech and Language Therapist. *Symbolic Play Test* (Lowe and Costello, 1988) administered: age equivalence 25 months (chronological age 26 months). Unable to complete any other formal assessment. Sociable with adults and used lots of gestures but little interaction with other children. Regular hearing tests throughout pre-school and early school age but no abnormalities detected.

Intervention: 1:1 weekly clinic based therapy for 7 months with Speech and Language Therapist then weekly pre-school language group for one year also run by Speech and Language Therapist. Difficult to engage in activities. Slow progress. Limited play skills noted. Continued severe difficulties with comprehension. Introduction of signing (MAKATON). Aggression towards other children (hitting) at Playgroup. Given an adult helper paid for by Education. Unable to understand social situations or interactions with peers. Twice weekly 1:1 therapy with Speech and Language Therapist plus continued attendance at pre-school language group. First formal language assessment age 3 years 8 months (*Reynell Developmental Language Scales*) age equivalence for verbal comprehension: 1 year 11 months; age equivalence for expressive language: 1 year 9 months.

At end of pre-school referred by Speech and Language Therapist to Educational Psychologist. Speech and Language Therapist's report highlighted social and emotional difficulties, aggression towards peers and high level of frustration. No shared play with peers. Good at puzzles and drawing. Assessed by Educational Psychologist as a child with good average non-verbal abilities (no information available on assessments used). Place given at local Language Unit at age 4 years 11 months. Diagnosis on entry

(Statement of Special Educational Needs): severe receptive and expressive language disorder.

Made good progress at Language Unit but continued significant difficulties with conceptual development, especially temporal and spatial concepts and also verb development. Very poor sequencing skills including dressing (self and doll) but no evidence of dyspraxia. Assessed by Speech and Language Therapist using *Bracken Basic Concept Scale* at chronological age 6 years 4 months: overall concept age equivalence 5 years 1 month, percentile rank 9. Very weak skills noted in quantity and time and sequencing. Concept age for quantity: 3 years 10 months, percentile rank 4; concept age for time and sequencing: 4 years 10 months, percentile rank 5. Continued poor auditory sequencing skills. Report by Language Unit Teacher noted fragile self confidence leading to either distress and tearfulness or becoming very loud and demanding trying to take control of situations. Tendency to talk over other children and tolerate interaction only on his terms. Social skills intervention focusing on turn taking and increased tolerance of peers.

Transferred to local mainstream primary school at age 7 years 9 months. Educational Psychologist's report on AB just prior to transfer noted "*a general level of intellectual functioning within the expected average range for his age*". No information available on what formal/informal assessment this opinion based on. Last formal language assessment at age 6 years 10 months (CELF) obtained Total age equivalence of 5 years 0 months: *Word Classes* standard score of 4 (percentile rank 2); *Oral Directions* standard score of 5 (percentile rank 5); *Sentence Structure* standard score of 7 (percentile rank 16); *Formulated Sentences* standard score of 3 (percentile rank 1); *Recalling Sentences* standard score of 3 (percentile rank 1); *Word Structure* standard score of 9 (percentile rank 37). (Standard score average range 7 – 13).

Very supportive primary school and excellent support provided by parents who worked collaboratively with the school staff. Regular outreach support provided by Language Unit Teacher. Language programme devised and monitored by Speech and Language Therapist and implemented in school by

Teaching Assistant (once weekly). Work concentrated on conceptual development and vocabulary acquisition. Statement review at age 8 years 6 months noted very good academic progress in all areas with AB in middle ability groups for numeracy and literacy. Continued to require instructions given individually by his Teaching Assistant in the classroom environment. Concerns throughout primary school years with emotional and behavioural development. AB seen as well behaved but very emotionally immature boy (comment made by AB's Teaching Assistant). Reported bullying of AB ("teasing"). Attended numerous social skills workshops and groups run by Speech and Language Therapists during school holidays. Work concentrated on identifying emotions in self and others. Transfer report by Outreach Teacher prior to commencing secondary education noted "wonderful progress" in all curriculum areas with educational attainments well within the expected guidelines for his age. Special Educational Needs Co-ordinator noted good all round progress with no particular concerns highlighted by school staff. Increase in AB's confidence and self-esteem. Discharged by Speech and Language Therapy Service on entry to local High school.

Language Assessment prior to commencement of research study

Clinical Evaluation of Language Fundamentals: Third edition. (CELF UK 3)

AB obtained an overall receptive language score of 85 (average range 85 – 115). Percentile rank 16.

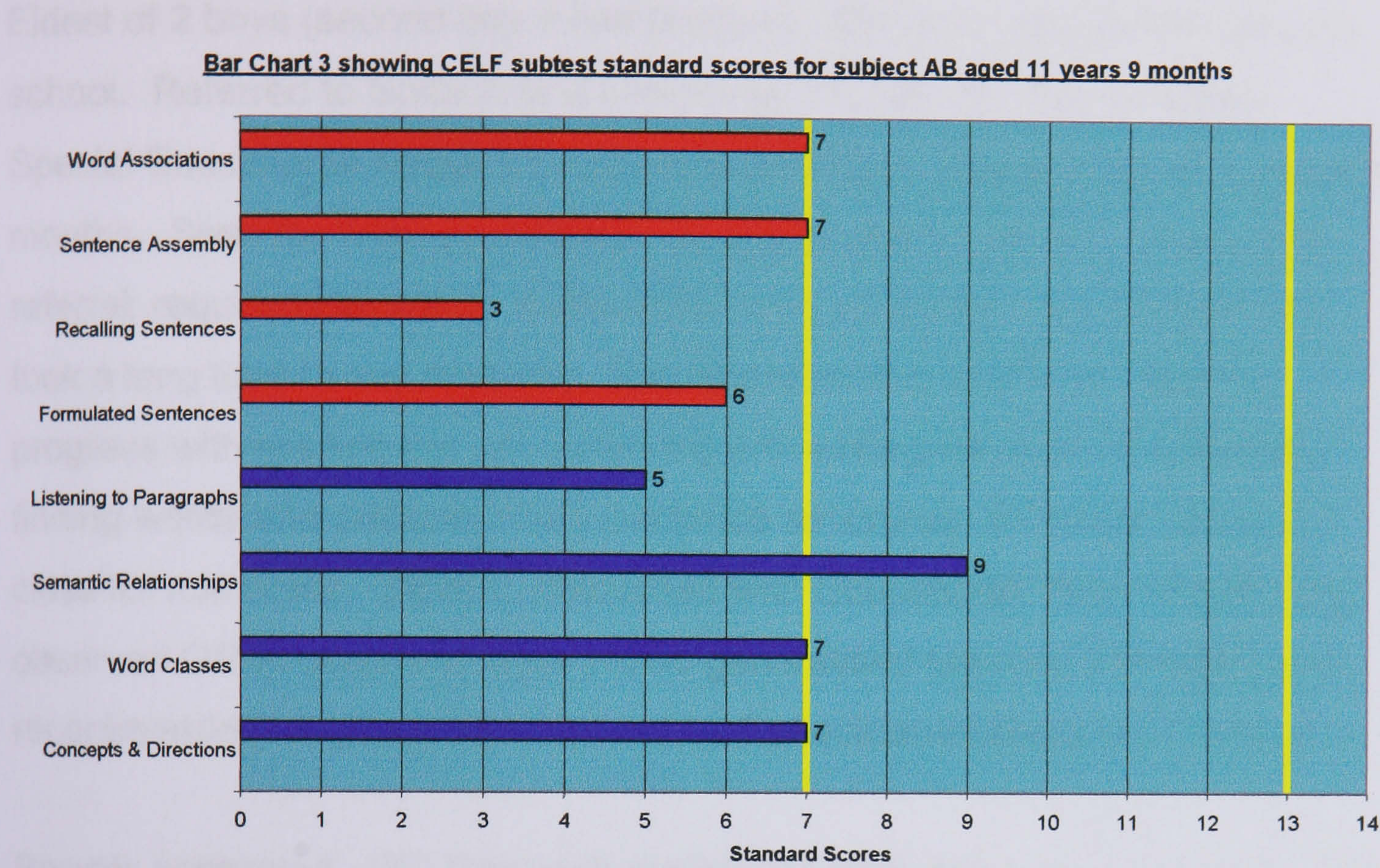
AB obtained an overall expressive language score of 72 (average range 85 – 115). Percentile rank 3.

AB obtained a Total (i.e. receptive plus expressive) language score of 75 (average range 85 – 115). Percentile rank 5.

At chronological age 11 years 9 months, AB obtained a receptive language age equivalence of 8 years 2 months and an expressive language age equivalence of 6 years 3 months. His overall total age equivalence was 7 years 0 months.

Bar Chart 3: CELF subtest standard scores for subject AB

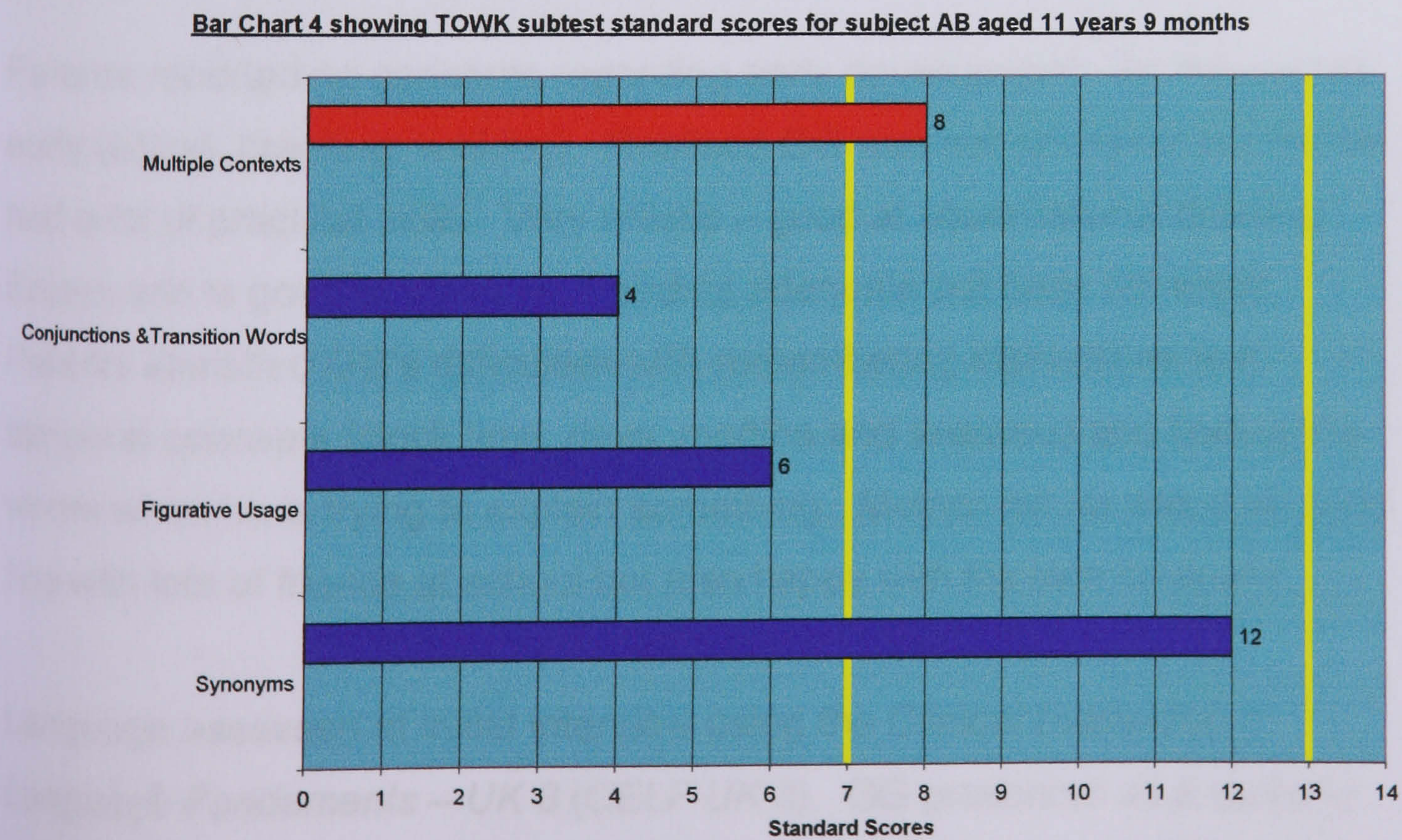
Expressive subtests are in red and receptive subtests are in blue.
Lines in yellow indicate the average range for standard scores (7 – 13).



Language Assessment administered after completion of experimental tasks (*TOWK*)

Bar Chart 4: TOWK subtest standard scores for subject AB

Expressive subtests are in red and receptive subtests are in blue.
Lines in yellow indicate the average range for standard scores (7 – 13).



Name: GG

Chronological age: 9 years 10 months

Eldest of 2 boys (second boy a half brother). Attended mainstream primary school. Referred to Speech and Language Therapy Service by school Special Educational Needs Co-ordinator (SENCo.) Age at referral: 7 years 9 months. Seen for initial assessment at age: 8 years 1 month. Reason for referral: required classroom instructions to be repeated, very hesitant and took a long time to say anything. Found explanations difficult. Making progress with reading but not achieving with writing because of difficulties finding words and understanding sentence structures. In lowest group in class for numeracy. SENCo. discussed with Educational Psychologist who observed GG in class and reported no generalised learning difficulties and recommended language assessment by Speech and Language Therapist.

Parents separated. GG lived with mother but sees father at weekends. Both parents attended language assessment. Family history of language difficulties. Mother and father both reported they found school difficult and required extra support with literacy. Mother's half uncle dyslexic and Mother's brother also had literacy difficulties and "not a good speaker". However, no other family member seen by Speech and Language Therapy Service.

Parents reported no concerns regarding early development. All milestones early (sitting, crawling, walking). Realised GG was not academic but felt he had a lot of practical skills. Very artistic – good at observational drawing. Enjoys and is good at science. Reading adequate but does not enjoy. Parents identified GG's difficulties with remembering instructions and temporal concepts (clock time, days, months and seasons) and finding the words when he is trying to explain something. Mother felt he was a sociable boy with lots of friends at school but also happy with his own company.

Language assessed at initial interview using the *Clinical Evaluation of Language Fundamentals – UK 3 (CELF UK 3)*. GG presented as a sociable and chatty boy, very co-operative with good attention. *Sentence Structure*

standard score: 10 (percentile rank 50); *Concepts and Directions* standard score: 8 (percentile rank 25); *Word Classes* standard score: 5 (percentile rank 5); *Word Structure* standard scored: 7 (percentile rank 16); *Formulated Sentences* standard score: 8 (percentile rank 25); *Recalling Sentences* standards score: 6 (percentile rank 9). Receptive Language Score: 86 percentile rank: 18. Expressive Language Score: 80 percentile rank: 9. Total Language Score: 78 percentile rank: 7. Receptive language age equivalence: 6 years 8 months. Expressive language age equivalence: 6 years 10 months. Total language age equivalence: 6 years 7 months. (Chronological age: 8 years 1 month).

Intervention: agreed with family and school that advice would be provided for classroom management and the likely effects of language difficulties on learning with suggested strategies to support GG's language development in class. Family and school both felt that a specific language programme would not be effective as GG disliked attention drawn to difficulties in front of peers or being singled out for special work. Speech and Language Therapy Service to provide review of progress at school's request.

Language Assessment prior to commencement of research study

Clinical Evaluation of Language Fundamentals: Third edition. (CELF UK 3)

GG obtained an overall receptive language score of 80 (average range 85 – 115). Percentile rank 9.

GG obtained an overall expressive language score of 89 (average range 85 – 115). Percentile rank 23.

GG obtained a Total (i.e. receptive plus expressive) language score of 80 (average range 85 – 115). Percentile rank 5.

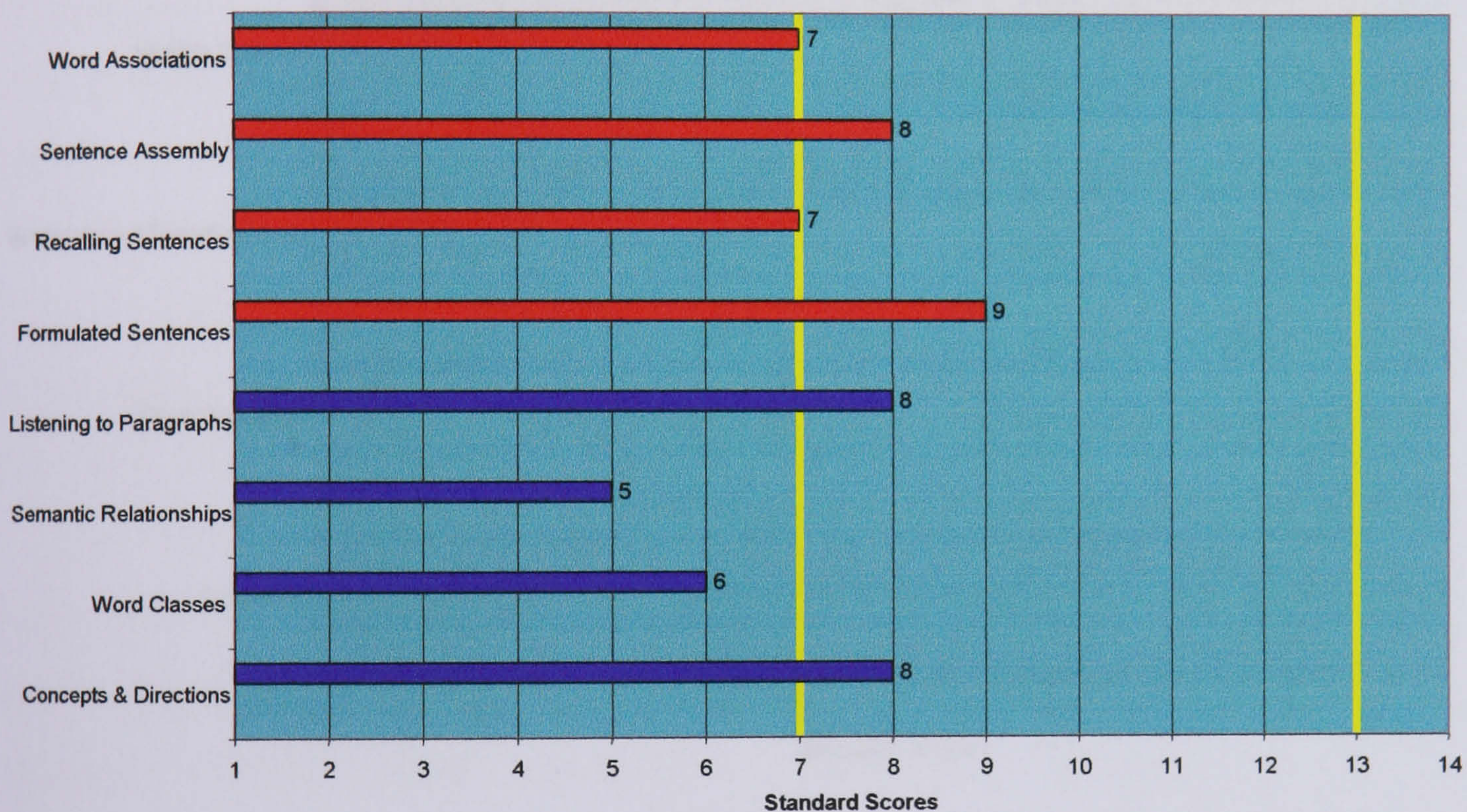
At chronological age 9 years 10 months, GG obtained a receptive language age equivalence of 6 years 6 months and an expressive language age

equivalence of 6 years 10 months. His overall total age equivalence was 7 years 0 months.

Bar Charts 7: CELF subtest standard scores for subject GG

Expressive subtests are in red and receptive subtests are in blue. Lines in yellow indicate the average range for standard scores (7 – 13).

Bar Chart 5 showing CELF subtest standard scores for subject GG aged 9 years 10 months

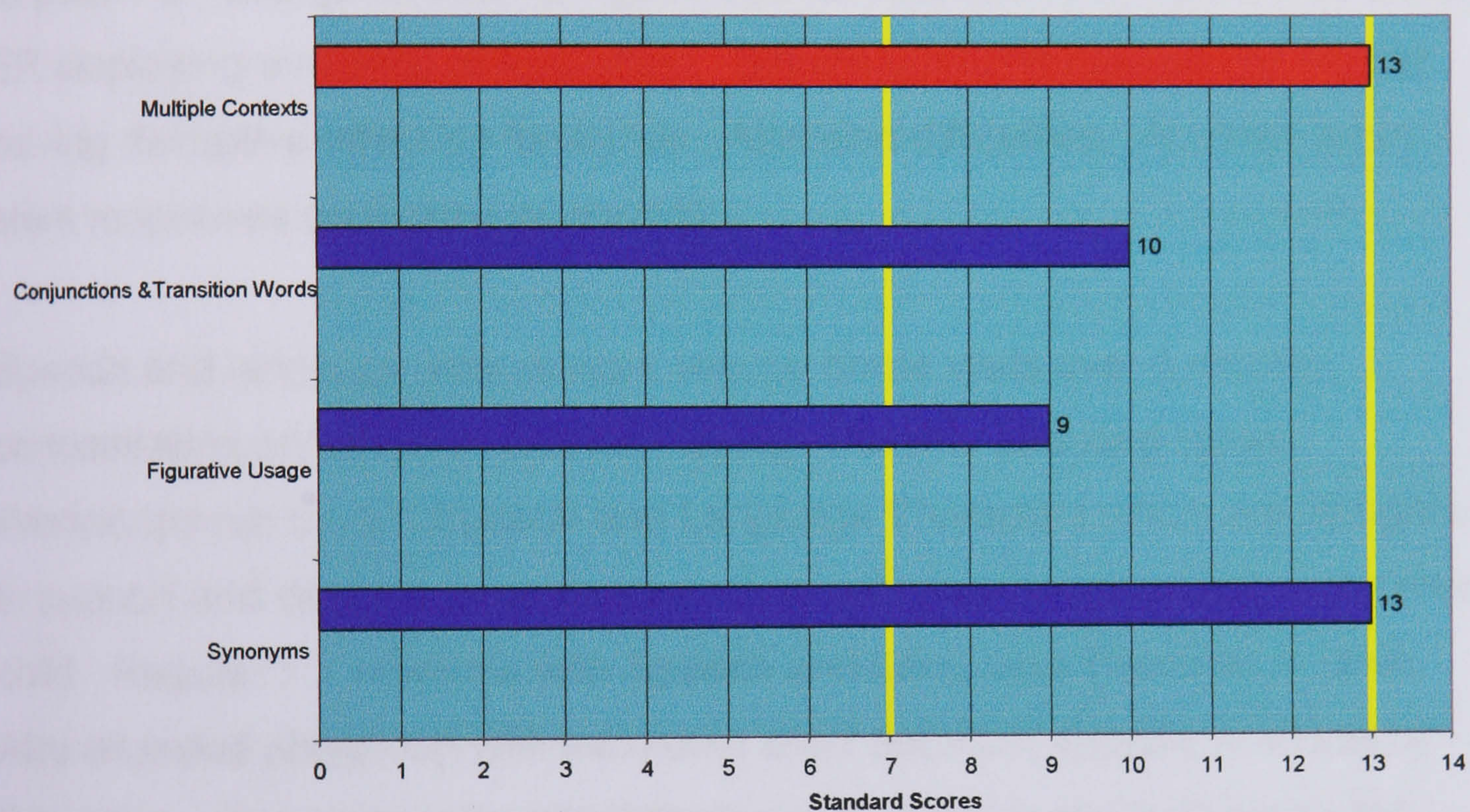


Language Assessment administered after completion of experimental tasks (*TOWK*)

Bar Chart 8: *TOWK* subtest standard scores for subject GG

Expressive subtests are in red and receptive subtests are in blue.
Lines in yellow indicate the average range for standard scores (7 – 13).

Bar Chart 6 showing *TOWK* subtest standard scores for subject GG aged 9 years 10 months



Name: ER

Chronological age: 9 years 3 months

Youngest of 4 children (3 boys 1 girl). Referred to Speech and Language Therapy Service by Senior Clinical Medical Officer following visit to Audiology Department over concerns re. hearing. ER not responding to spoken language including his name. Age at referral: 2 years 2 months. No expressive language at this time, communicated using "grunts". Responded to peek - a - boo game and with good eye contact but no symbolic play skills. ER displaying evidence of frustration. Severe tantrums reported by mother having disruptive effect on family life. Attention difficulties. Acoustic brain stem responses confirmed as normal.

Speech and language intervention: regular home visits over 6 months concentrating on attention and turn taking. Parents attended Hanen Workshops run by two Speech and Language Therapists which are designed to support and develop parent's interaction with their communication impaired child. Regular 1:1 sessions with Speech and Language Therapist at clinic. Also attended playgroup with individual adult assistant support provided by Education. Good progress with listening and attention and turn taking but slow progress with receptive and expressive language development. Consultant Paediatrician explored with mother the nature of ER's temper tantrums. He felt these were related to separation anxiety when ER was separated from his mother at age 9 or 10 months when mother stayed at hospital with older daughter who was having an operation. No other information on file regarding this. Referred to Child Development Centre but decision made that needs could be met in the community.

At age 3 years 5 months began attending speech and language therapy group for language disordered children 3 x 2hrs per week. Expressive language at 2 word level. Not possible to formally assess receptive language due to fragile attention skills.

Formal assessment at age 4 years 1 month (CELF Preschool). *Linguistic Concepts* standard score: 3 (percentile rank 1); *Basic Concepts* standard score: 3 (percentile rank 1); *Sentence Structure* standard score: 4 (percentile rank 2); *Recalling Sentences* standard score: 3 (percentile rank 1); *Formulating Labels* standard score: 6 (percentile rank 9); *Word Structure* standard score: 3 (percentile rank 1). (Standard score average range 7 – 13). ER obtained an overall receptive language score of 61 (percentile rank 1) and overall expressive language score of 67 (percentile rank 1). Total language age equivalence 2 years 6 months.

Statement of Special Educational Needs diagnosis: severe language disorder. Assessment by Educational Psychologist: *Griffiths Mental Development scales* ER functioning at an average level on non-verbal (performance) subtests. Object assembly subtest of WPPSI (Wechsler Pre-school and Primary Scales of Intelligence) was at a low to below average range of ability. This was attributed to poor self confidence and motivation by the Educational Psychologist who did not regard it as a true reflection of ER's ability.

At age 4 years 9 months began attending local Language Unit. Very sociable little boy. Not at stage of parallel play but would join other children if invited. Tantrums still continuing at home but decreased in number. Able to watch other children and copy. Turn taking skills still emerging. Described by the Language Unit Class Teacher as a happy little boy who enjoyed humour but with fragile self confidence. In a safe environment appeared happy and contented and anxious to please. Report by Consultant Paediatrician at age 4 years 11 months stated that plays skills and socialisation were "very good".

Made good progress at Language Unit. Development of social skills. Attended *Social Use of Language Programme* (Wendy Rinaldi) run by a Speech and Language Therapist. At age 7 years 1 month attended weekly narrative skills group run by a Specialist Speech and Language Therapist for 7 months. This focused on all aspects of narrative including composition of stories (*who, what, where, why*), understanding and use of temporal concepts

(e.g. *beginning, middle, end, before, after*), syntax development including conjunctions, cause and effect, prediction.

Formal assessment at age 8 years 5 months using the *Clinical Evaluation of Language Fundamentals – UK 3 (CELF UK 3)*. *Sentence Structure* standard score: 8 (percentile rank 25); *Concepts and Directions* standard score: 8 (percentile rank 25); *Word Classes* standard score 10 (percentile rank 50); *Word Structure* standard score: 7 (percentile rank 16); *Formulated Sentences* standard score: 6 (percentile rank 9); *Recalling Sentences* standard score: 3 (percentile rank 1). (Standard score average range 7 – 13). ER obtained an overall receptive language score of 90 (percentile rank 25) and expressive language score of 74 (percentile rank 4). Receptive language age equivalence 7 years 8 months. Expressive language age equivalence 6 years 3 months.

Transferred to local mainstream primary school at age 8 years 9 months. Reported to have settled well by school staff. Joined a sports club and good at football. Worked well in year group. No problems reported with class work functioning at a low average level. Enjoyed and good at drama. School based language programme devised by Speech and Language Therapist and implemented daily by Teaching Assistant. Programme concentrated on development of expressive syntax. Half-termly monitoring visits by Speech and Language Therapist. Additional curriculum support provided by Outreach Advisory Teacher. Sociable but no specific friendships. Social interaction revolved around sports. Tendency to high anxiety levels especially in class if unsure of instructions or explanations. Fragile self esteem reported by Speech and Language Therapist.

Language Assessment prior to commencement of research study

Clinical Evaluation of Language Fundamentals: Third edition. (CELF UK 3)

ER obtained an overall receptive language score of 76 (average range 85 – 115). Percentile rank 5.

ER obtained an overall expressive language score of 76 (average range 85 – 115). Percentile rank 5.

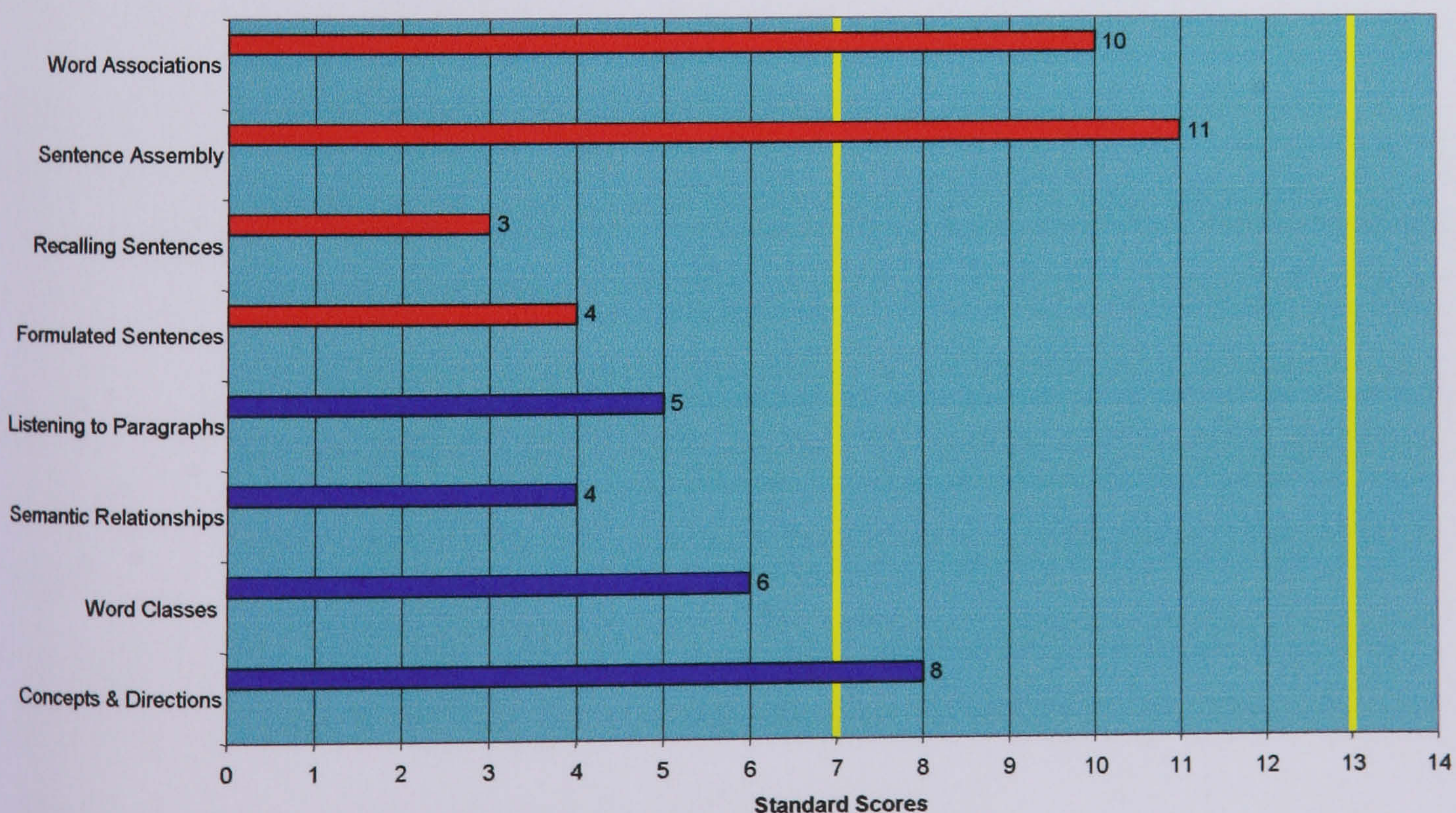
ER obtained a Total (i.e. receptive plus expressive) language score of 76 (average range 85 – 115). Percentile rank 5.

At chronological age 9 years 3 months, ER obtained a receptive language age equivalence of 6 years 3 months and an expressive language age equivalence of 6 years 0 months. His overall total age equivalence was less than 6 years 0 months (the basal age equivalent obtainable for this assessment).

Bar Chart 5 CELF subtest standard scores for subject ER

Expressive subtests are in red and receptive subtests are in blue. Lines in yellow indicate the average range for standard scores (7 – 13).

Bar Chart 7 showing CELF subtest standard scores for subject ER aged 9 years 3 months

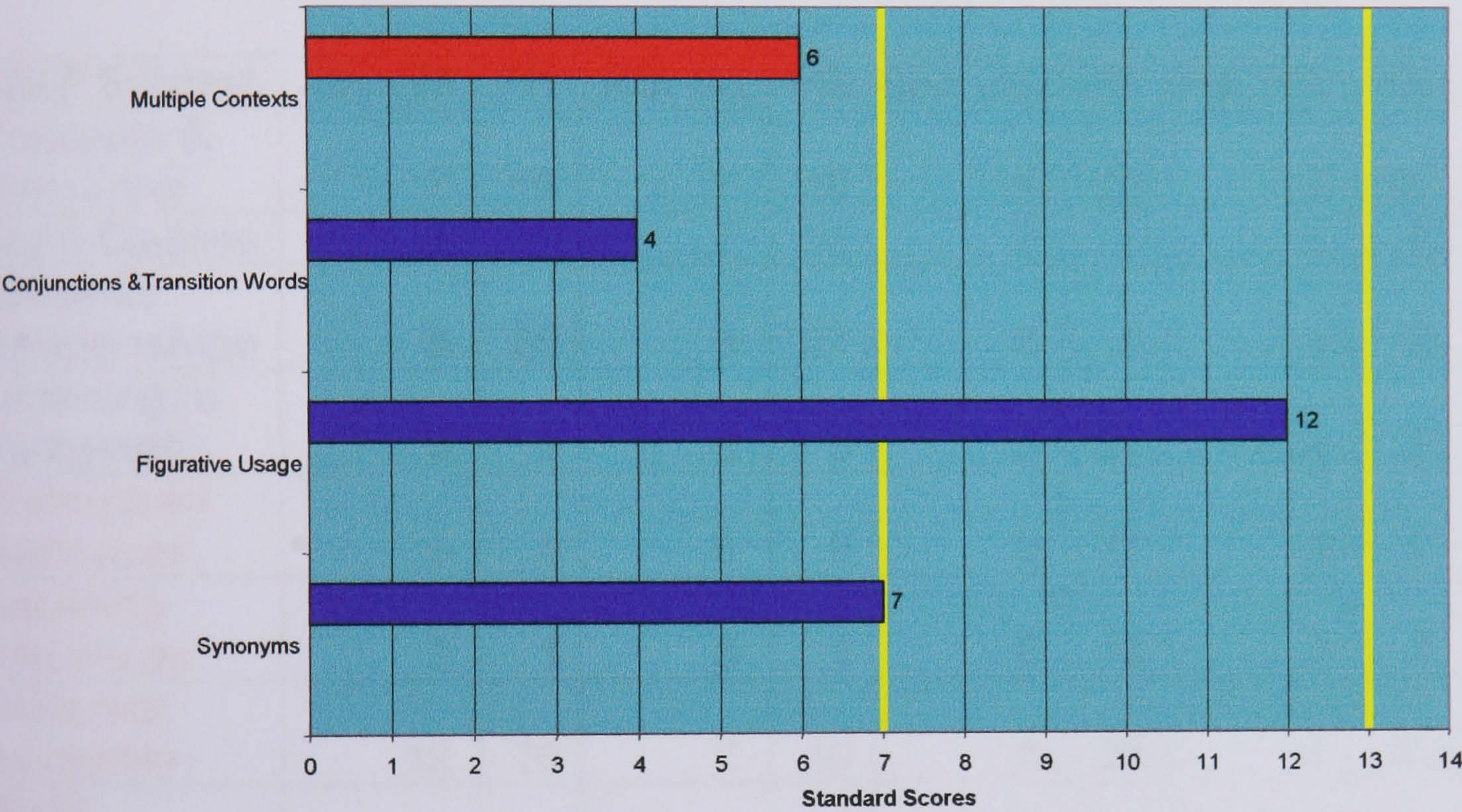


Language Assessment administered after completion of experimental tasks (*TOWK*)

Bar Chart 6: *TOWK* subtest standard scores for subject ER

Expressive subtests are in red and receptive subtests are in blue. Lines in yellow indicate the average range for standard scores (7 – 13).

Bar Chart 8 showing *TOWK* subtest standard scores for subject ER aged 9 years 3 months



SLI group: strengths and weaknesses

The following section looks at the SLI subjects’ strengths and weaknesses as measured by formal language assessment. For ease of comparison subjects’ language scores are presented in tabular form (**Tables 4.1. – 4. 3.**).

Table 4.1.

SLI subjects’ Standard scores and Percentile ranks for subtests of the CELF language assessment.

CELF Subtest	JD: SS	PR	AB: SS	PR	GG: SS	PR	ER: SS	PR
Concepts & Directions	7	16	7	16	8	25	8	25
Word Classes	5	5	7	16	6	9	6	9
Semantic Relationships	8	25	9	37	5	5	4	2
Listening to Paragraphs	6	9	5	5	8	25	5	5
Formulated Sentences	5	5	6	9	9	37	4	2
Recalling Sentences	3	1	3	1	7	16	3	1
Sentence Assembly	12	75	7	16	8	25	11	63
Word Associations	6	9	7	16	7	16	10	50

Table 4.1. Standard scores (SS) 7-13 are within the normal range. Receptive language subtests are titled in blue and expressive language subtests are titled in red. Standard scores and Percentile ranks (PR) which are below 2 Standard Deviations from the normal range are in bold.

Table 4.1. shows that all children except GG had at least one subtest score which fell below 2 Standard Deviations. GG, the only child not to be diagnosed pre-school or attend a Language Unit, presented with the strongest language profile with only two out of the total eight subtest scores below the normal range (*Word Classes* and *Semantic Relationships*). ER presented with the weakest overall language profile with 3 subtest scores which fell below 2 Standard Deviations. All the children except GG had their lowest subtest score (percentile rank 1) *for Recalling Sentences* (repeating sentences which increase in length and linguistic complexity).

Table 4.2.
SLI subjects’ Receptive, Expressive and Total (Receptive + Expressive)
language scores obtained on the CELF assessment.

CELF Scores	JD(13.2)	PR	AB(11.9)	PR	GG(9.10)	PR	ER(9.3)	PR
Receptive Language Score	SS 79	8	SS 85	16	SS 80	9	SS 76	5
Receptive Language Age Equivalent	7.08 yrs	-	8.02 yrs	-	6.06 yrs	-	6.03yrs	-
Expressive Language Score	SS 77	6	SS 72	3	SS 89	23	SS 76	5
Expressive Language Age Equivalent	6.07 yrs	-	6.03 yrs	-	6.10 yrs	-	6.0 yrs	-
Total Language Score	SS 73	4	SS 75	5	SS 86	18	SS 76	5
Total Language Age Equivalent	7.07 yrs	-	7.0 yrs	-	7.0 yrs	-	<6.0yrs	-

Table 1.2
SS = Standard Score (normal range 85-115). PR = percentile rank (normal range 16 – 84). Numbers in brackets following the subjects’ initials refer to their chronological ages. *CELF* age equivalents are presented. However, language age equivalents obtained on formal assessments should be treated with great caution. This is especially true of language disordered children where there can be considerable variation between individual standard scores.

From the above table it can be seen that AB’s receptive language score is within the low average range for his age. However he obtained the weakest expressive language score for the group with a percentile rank of 3. GG’s expressive language score is within the low average range as is his overall Total Language Score (percentile rank 18). ER presents with the overall weakest, and also flattest, profile having obtained a percentile rank of 5 in all areas.

Table 4.3. SLI subjects' Standard scores and Percentile ranks for subtests of the TOWK language assessment.

TOWK Subtest	JD: SS	PR	AB: SS	PR	GG: SS	PR	ER: SS	PR
Synonyms	8	25	12	75	13	84	7	16
Figurative Usage	7	16	6	9	9	37	12	75
Conjunctions & Transition Words	3	1	4	2	10	50	4	2
Multiple Contexts	4	2	8	25	13	84	6	9

Table 4.3. Standard scores (SS) 7-13 are within the normal range. Receptive language subtests are titled in blue and expressive language subtest in red. Percentile ranks (PR) and Standard scores which are below 2 Standard Deviations from the normal range are in bold.

All the children apart from GG presented with severely impaired syntactic knowledge specifically related to conjunctions and transition words (-2SD). Strengths were found in the children’s understanding of synonyms and figurative language.

Summary of information presented in Tables 4.1 .– 4.3.

JD (C.A. 13.2), AB (C.A. 11.9) and GG (C.A. 9.10) all present with similar Total Language Age Equivalences (7years 0 months – 7. years 7 months) with JD, who is chronologically the eldest, obtaining the highest equivalence. ER who obtained the most impaired language profile in terms of standard scores also obtained the lowest Total Age Equivalence (below the basal age of 6 years 0 months).

Looking at standard scores all four subjects had at least five out of the total of twelve subtests (*CELF* plus *TOWK*) within the normal range for their ages. All four subjects had conceptual knowledge, as measured by the *Concepts & Directions* subtest of the *CELF*, within the normal range for their ages. (It is acknowledged that this represents just one test of conceptual development). Figurative language as measured by the *TOWK* assessment was a relative strength for the group with only one subject (AB) scoring just below the normal range for his age (standard score of 6).

However, there was a noticeable difference in the pervasiveness of the language impairments between the three subjects who had attended Language Units and the one subject who had not been identified as having a language disorder until middle school (GG).

GG (C.A. 9.10) had the strongest overall language profile of all four subjects. Ten out of the twelve subjects were within the normal range although the majority (7 subtests) were at the lower end of the normal range (standard scores 7 – 9). He was also the only subject not to present with impairments in both domains of language: receptive and expressive, since all expressive standard scores were within the normal range for his age.

GG's only difficulty on formal language assessment was in receptive language and specifically related to semantics. On the *CELF* assessment his understanding of *Semantic Relationships* was at the 5th percentile and his understanding of *Word Classes* was at the 9th percentile. This is in contrast to his performance on semantic subtests of the *TOWK*. For both *Multiple Contexts* (an expressive subtest) and *Synonyms* his scores were at the 84th percentile. This may represent a discrepancy between semantic knowledge as represented by the *TOWK* tests and the ability and flexibility to manipulate semantic knowledge to form complex relationships and associations as measured by the *CELF* tests.

Unlike GG, all three of the children with impaired language who had attended Language Units (JD, AB & ER) presented with syntactic difficulties as

measured by both the *CELF* and the *TOWK*. On the *TOWK* assessment the children's ability to understand conjunctions (*Conjunction & Transition Words* subtest) was either at the 1st or 2nd percentiles. On the *CELF* assessment all three children obtained 1st percentile ranks for the *Recalling Sentences* subtest which looks at the ability to retain and replicate sentence structures which increase in length and complexity. All three children experienced difficulties formulating sentences (*Formulated Sentences* subtest) obtaining percentile ranks of 5 (JD), 9 (AB) and 2 (ER). All three of these children presented with particular difficulties in this subtest with using adversative conjunctions which express contradiction e.g. *but, although, however* and causal conjunctions which express relationships between events e.g. *because, if*.

In contrast, all four children obtained scores within the normal range for the *Sentence Assembly* subtest, percentile ranks 75 (JD), 16 (AB), 25 (GG) and 63 (ER). This test requires the child to rearrange "muddled up" syntactic units into grammatically correct sentence structures. Unlike the other syntactic subtests this has written language support and requires a judgment of what constitutes an acceptable sentence rather than the retention and/or creation of complex syntactic structures, or the selection of a specific complex syntactic unit (conjunctions).

In the area of semantic knowledge and use all four children obtained standard scores within the normal range for their ages for *Synonyms (TOWK)*. They experienced more difficulty with *Multiple Context* with only AB and GG obtaining a standard score within the normal range (percentile ranks 25 and 84 respectively). ER achieved a score just below the normal range (standard score 6, percentile rank 9) while JD experienced considerable difficulties, obtaining a percentile rank of 2. On the *CELF* assessment *Word Associations*, which looks at the categorisation and retrieval of semantically related information, was a strength with only JD scoring just below the normal range for his age (standard score 6, percentile rank 9). For *Semantic Relationships* ER and GG both scored below the normal range for their age (percentile ranks 2 and 5). Overall AB presented with the strongest semantic

skills scoring within the average range for all 5 subtests. AB obtained the highest receptive language score (percentile rank 16) with all three core receptive language subtests within the normal range.

All three children from Language Units (JD, AB and ER) scored below the normal range for their age on *Listening to Paragraphs*. This test looks at the child's ability to retain and process detailed information presented in a narrative format using high level language processing skills such as inference.

In conclusion, as a group, and acknowledging individual differences, the children with impaired language presented with relative strengths in the areas of figurative language, conceptual development and semantics. Syntactic knowledge and use, especially the understanding and use of conjunctions (in particular adversative and causal conjunctions), was overall a weakness for the group.

Information obtained from the parents' interviews and parent and teachers' questionnaires regarding the SLI children's social skills and emotional development.

A combination of parent interviews and parent and school questionnaires were used to obtain information about the SLI children's social skills and emotional maturity current to their taking part in the research.

In order to compare subjects the information is presented in tabular form. Summaries of the individual parent interviews are provided in Appendix 12. Information obtained from the parent interviews and questionnaires is placed in context with the children's language profiles obtained from formal assessment.

Parent interviews

The information from the parent interviews is given in **Table 4.4**. The parents were asked to answer four questions:

- How accurate a reflection do you feel the video is of your child's abilities?
- If you had to put an age on your child's social and emotional development what age would that be?
- Do you have any present concerns regarding your child?
- How do you see your child's future?

Accuracy for each video interview was rated by the parents as either *good*, *fair*, *poor*. Asterisks were used to indicate the level of concern expressed by the parents.

Table 4.4. Parent Interviews

	<u>JD (13.2)</u>	<u>AB (11.9)</u>	<u>GG (9.10)</u>	<u>ER (9.3)</u>
Accuracy				
<i>Puppy Story</i>	good	good	fair	good
<i>Kitten Story</i>	good	good	good	good
Age				
(Social/Emotional)	8-9yrs	6-7yrs	7-8yrs (context)	highly variable (context)
Concerns	social immaturity*	social/ emotional immaturity**	literacy*	social/ emotional immaturity** education** language**
Future	*	**	-	**

Table 4.4. Information obtained from parental interviews. * = moderate level of concern
** = high level of concern. GG’s mother had no specific concern regarding his future.

Levels of concern reported by parents can be related to strengths and weaknesses identified by the formal language assessment. The mother of GG, who presented with the strongest language profile, reported the lowest levels of concern. She had no specific anxieties regarding his future and was only concerned with his poor literacy. Unlike all the other parents she did not

mention social or emotional maturity as a concern. However, like all the other parents interviewed she gave GG a social and emotional age equivalence which was lower than his chronological age. GG's mother stated that his emotional age depended on context but ranged from 7 – 8 years.

ER, who presented with the most impaired language profile, obtained the highest levels of parental concern. His mother reported high levels of concern relating to his social/emotional immaturity, educational attainment, language skills and future prospects. ER's mother was unable to give an emotional age; she said this was highly variable depending on context and ranged from *very immature* (pre-school level) to *quite mature for his age*.

The parents of AB, who had scored highest on assessment of receptive language skills, had no concerns regarding his language or educational attainments but high levels of concern related to his social/emotional immaturity and the effect this might have on his future.

JD, the eldest SLI subject, was given the highest age equivalence for social/emotional maturity. However this was still considerably below his chronological age.

Questionnaires

Tables 4.5. and 4.6. (below) show the information obtained from *The Teacher's Report Form*, *The Parent's Report Form* and *The Pragmatics Profile of Everyday Communication Skills in School-Age Children*.

The Teacher's Report Form and The Parent's Report Form

The researcher allocated each question in *The Teacher's Report Form* and *The Parent's Report Form* to one of the seven subheadings shown in **Table 4.5.** (page 355).

The teacher's and parents responses to the questions were then scored by the researcher such that:

0 = no concern

1 = moderate level of concern

2 = high level of concern

The overall level of concern reported for a particular subgroup (e.g. *Emotional maturity, Anti-Social behaviour*) reflected the majority of scores recorded for the questions in that group.

The Parent's Report Form was used to look at the level of agreement found for the children's social and emotional skills in the two different environments of home and school.

Information from *The Parent's Report Form* is not reported separately but is commented on in **Table 4.5**. *Very good* was used if there was complete agreement between the parents and teachers scores. *Good* was used if the majority of the scores coincided and *poor* was used if the majority of scores did not coincide.

Figures in brackets are used where a difference in scores occurred. The figures are the parent's score for that section. ER was the only subject where such differences occurred. However, it should be noted that the school did not return the form for AB and the figures reported are those obtained from his parents and are therefore given in red. GG's mother declined to fill in *The Parents Report Form* so no comparison was available for comment.

Table 4.5. Teachers Report Form

	JD (13.2)	AB (11.9)	GG (9.10)	ER (9.3)
Emotional maturity	2	- 2	1	1
Anti-Social behaviour	0	- 0	0	0
Social Interaction skills	1	- 2	1	0 (2)
Anxiety Levels of pupil	2	- 1	1	2
Concentration	2	- 1	2	0
Organisational skills	1	- 0	1	0
Educational Attainment	1	- 0	1	0 (2)
Agreement with Parent Report	Very good	N/A	N/A	Good

Table 4.5. 0 = no concern, 1 = moderate level of concern, 2 = high level of concern. Scores in red are those obtained from the *Parent’s Report Form* which differ from the *Teachers Report Form*. AB’s school did not return the questionnaire so figures in red are the parents’ responses obtained from the *Parent’s Report Form*.

From the above table it can be seen that none of the children with impaired language were considered to have anti-social behaviour. However, there was concern about all of the children’s emotional maturity.

Table 4.5. shows very good – good agreement between teachers’ and parents’ perceptions of the children in the two cases where comparable data was available (JD and ER).

AB who had the weakest expressive language skills had the most concern expressed related to emotional maturity and social interaction. GG presented with the strongest language profile and yet information from GG’s teacher showed more pervasive levels of concern than for ER (C.A. 9.3) who presented with the most impaired language profile. This may be related to expectations where less was expected of ER educationally and socially by

teaching staff than GG who had only relatively recently been diagnosed with language difficulties.

Support for this view comes from the discrepancy between the teacher's perceptions of ER compared with his parent's. ER's teacher expressed no concerns (0) regarding his educational attainments and commented that she felt ER was coping very well with school considering his language difficulties and the fact that he had previously been attending a Language Unit. ER's parents however had high levels of concern (2) regarding his educational attainments feeling that his language disorder would prevent him achieving well in education as he got older and in comparison with his peers.

A similar discrepancy was found between the teacher and parents in regard to ER's social interaction skills which also appeared to be related to expectations. ER's teacher felt he interacted well *given his severe language difficulties* (teacher's comment). ER's parents rated his skills in comparison with language normal peers.

JD, the eldest of the four subjects, was given the highest level of concern (3 high level concerns) by parents and teachers although only moderate level of concern had been expressed in the parent interview.

The information obtained from *The Teacher's Report Form*, *The Parent's Report Form* and formal language assessment suggested that the children did not have pragmatic difficulties per se but that the teachers' perceptions of language use in the classroom related to the children's social and emotional immaturity as reported by the parents.

The Pragmatics Profile

The subheadings used for scoring *The Pragmatics Profile of Everyday Communication Skills in School-Age Children* correspond to those used by the authors Dewart and Summers in the profile. *Communicative Functions* relates to skills such as giving and requesting information, narrative, as well as the understanding of humour and the expression of emotion. *Response to Communication* refers to abilities such as clarifying communication breakdowns, negotiation skills, understanding idioms and sarcasm. *Interaction and Conversation* asks questions regarding to the child's motivation for interaction and their conversational skills. *Contextual Variation* looks at the child's ability to vary their communication depending on the context (person and situation).

The same scoring system was used as for *Teacher's Report Form* and *The Parent's Report Form*.

Table 4.6. The Pragmatics Profile

	JD (13.2)	AB (11.9)	GG* (9.10)	ER (9.3)
Communicative Functions	2	2	1	2
Response to Communication	2	2	1	1
Interaction and Conversation	2	2	1	2
Contextual Variation	1	1	0	1

Table 4.6. 0 = no concern, 1 = moderate level of concern, 2 = high level of concern. GG* profile completed by class teacher at mother's request.

Table 4.6. shows that all the parents who completed the form had some level of concern about every child's use of communication in every category. Information from *The Pragmatics Profile* was obtained form GG's teacher who reported no concerns in relation to *Contextual Variation*. Overall GG was given the lowest levels of concern. This does correspond to the information

provided by GG's mother during the parent interview (**Table 4.4.**) whose only concern related to literacy. GG presented with the strongest language profile of all four subjects.

Procedures

This section contains an overview of the procedures used in this third study with SLI children. More detailed information regarding the experimental tasks is given in the following section (page 363).

The procedures used in this third study were based on those developed by Donaldson and Westerman in their research looking at language normal children's understanding and resolution of ambivalent emotion (1986). They were replicated by this author in the first study and formed the basis of the second study differentiating the specific cognitive-linguistic skills required by children for this area of emotional development.

The procedures introducing the experimental tasks for *The Puppy Story* and *The Kitten Story*, and the debriefing procedures at the end of the sessions, were the same for the SLI subjects as for the typically developing children with one exception. Only minor adjustments in terms of vocabulary had been made for the British language normal study (see Chapter 3). As these procedures had been written for children as young as 4 years old they were felt to be suitable for the SLI subjects in this third study. The one exception to the procedures related to the Introduction to the experimental tasks which had been written by the American researchers. The two sentences regarding confidentiality were omitted. (See Appendix 7). Instead each subject was told that his parent(s) might wish to look at the video and this would be allowed if he agreed. This was explained to the subject at the beginning of each of the two experimental sessions. Appendix 1 contains a copy of the introduction and debriefing procedures.

Each child was seen prior to the commencement of the experimental tasks in order to assess their receptive and expressive language skills. This was to ensure their suitability as subjects as well as a means of providing information on their individual language profiles.

First the child's understanding of the concepts *same*; *different*; *same time*; *first one and then the other*; *separate* and *mixed up* was tested. The concepts *same/different* were assessed using *The Clinical Evaluation of Language Fundamentals – Preschool* (Wiig, Secord and Semel, 2000). The concepts *same time/ first one and then the other* were assessed by the researcher tapping the table three times. The child was asked to say if the researcher had tapped the table with her hands *at the same time* or with *first one and then the other*. This was repeated three times and a 100% success rate was required to pass the test.

The concepts *separate* and *mixed up* were tested using three pictures. These are described in *Assessing SLI subjects' conceptual understanding* page 313. The child was shown the pictures which were laid out in front of him on the table and asked to point (one at a time) to: the colours in the bottle that are separate, the empty bottle and the colours in the bottle that are mixed together. The questions could be repeated if necessary but no other prompting was permitted. A 100% success rate was required in order to pass the test.

Formal language assessment was carried out using the *Clinical Evaluation of Language Fundamentals – UK 3 (CELF UK 3)* (Semel, Wiig and Secord, 2000). All six core subtests were administered together with the two supplementary subtests. The test was administered over two sessions.

The language assessment results had to be current i.e. obtained within the last 6 months. The subjects for this study were all assessed within one month of the experimental tasks being presented. Three of the four subjects were assessed by this author. The fourth subject had been assessed using the six core subtests by his Speech and Language Therapist within the one month

period. This author then administered the two supplementary subtests before presenting the research tasks. Only those subjects who fulfilled the language assessment criteria and demonstrated their understanding of all six concepts were accepted for the research study (with one exception, see below).

All four children identified as potential subjects were subsequently included in the research. One subject did not achieve the basal Total language age equivalence of 7 years 0 months but he did achieve one receptive core subtest and one expressive core subjects within the average range for his age. After consideration he was accepted onto the study.

For the presentation of the experimental tasks each subject was seen in two separate sessions with one story given in each session. *The Puppy Story* was presented during the first session and *The Kitten Story* presented during the second session. *The Puppy Story* was presented in accordance with the original American protocols while *The Kitten Story* had the support of pictures (see Experimental task page 363). The reason for not counterbalancing the story order was to prevent possible priming of answers for *The Puppy Story* by the support pictures provided for *The Kitten Story*.

The experimental sessions were audio and video recorded. This allowed for transcription of the subjects' responses and provided non verbal data on the subjects' communication and behaviours during the sessions. All the sessions took place in a quiet room either at a Speech and Language Therapy clinic or school with only the interviewer and subject present. The sessions were approximately 30 minutes long. Audio tapes of the stories were recorded by readers of the same age and sex as the subjects.

The stories were presented in two parts. The subjects were asked to repeat both parts of the stories in their own words immediately after hearing them. This was to check their auditory verbal memory and narrative sequencing skills. If necessary the subjects could listen to the stories again on tape or have the researcher read them. "Wh" questions could also be used by the researcher to check comprehension (i.e. *who, what, where, when, why*).

These protocols followed those established by Donaldson and Westerman for typically developing children.

For these SLI subjects *The Kitten Story* was presented with picture support for both the story and the interview questions. For *The Kitten Story* the subjects were also provided with paper and pencils and told that they could draw an answer to a question if they preferred, rather than express it verbally or if the pictures provided by the researcher did not match what the subject wanted to express.

After the experimental sessions had been completed the subjects' language skills were further assessed using the *Test of Word Knowledge (TOWK)* by Wiig and Secord (1991). The same subtests were administered as had been used with the typically developing children in the second study. These were: *Synonyms, Figurative Usage, Multiple Contexts* (multiple meaning words) and *Conjunctions and Transition Words*. All the subjects completed these subtests in one session.

At the request of parents, two of the subjects were seen at a Speech and Language Therapy clinic during the school holidays and two were seen in school. Each child was seen for a total of five sessions. This comprised three sessions of concept/language assessment and the two sessions containing the experimental tasks. At the end of the last session each child was asked if he wanted feedback on his language assessments or to discuss the videos he had made with the researcher. All of the children declined this.

Once the experimental data had been gathered and the language assessments completed the parents were contacted to arrange informal interviews. All the parents asked to see the videos of their child. This was agreed with each child. Two of the children also asked to see the videos with their parent(s) and this was agreed. One interview took place in clinic and the other three were conducted in the families' homes. For two subjects the mother was the only parent present. For one subject both parents were present. For the remaining subject the mother was the predominate presence

and answered all the questions although the father was in the house and occasionally entered into the interview adding his own comments. Please see *Verbal interviews with parents* page 319 for further details of interview questions and procedures.

All the visits also included feedback to the parents on their child's language assessment scores and level of understanding of emotional ambivalence and emotional causality. This was with permission of the child. None of the children were present during this feedback to parents. The forms *The Pragmatics Profile of Everyday Communication Skills in School-Age Children* by Dewart and Summers (1995) and *The Parent's Report Form* (based on the *Achenbach Teacher's Report Form*) were left with the parents and then posted to the researcher. Stamped addressed envelopes were provided by the researcher. Parents were encouraged to contact the researcher if they were unclear about any of the questions or how to complete the forms. None of the parents did this. One parent subsequently decided not to complete the forms and they were returned blank to the researcher.

With the parents' permission the children's schools were contacted and the *Achenbach Teacher's Report Form* was sent to a member of school staff who knew the child well. For two subjects this was their class teacher, for one subject it was the child's Teaching Assistant. One school did not respond to the researcher's letters or telephone calls. Following receipt of the completed form an appointment was made to meet with the person who had completed it. This was to allow school staff to talk to the researcher concerning the child's presentation at school and to qualify and explain any of the comments made on the form. One teacher and the Teaching Assistant at their request completed the *Achenbach Teacher's Report Form* at the beginning of the informal interview while the researcher was present and discussed the questions with the researcher as they were answered. The other teacher completed the form and posted it to the researcher.

Experimental task

Each child was told that he was going to hear an audio tape recorded story about a child of the same age and sex as the subject. The two stories were presented in two separate sessions. The experimental task was identical to that of the original American research, the replication study (Chapter 2) and for *The Puppy Story* in the second research study (Chapter 3). A structured interview, written by the American authors, was used to elicit subjects' understanding of the story character's ambivalent feelings and their own theories about what causes emotions to change. *The Puppy Story* required subjects to co-ordinate feelings of love/anger and *The Kitten Story* co-ordinated sad/happy feelings. The interview protocols dealt separately with the issues of ambivalence and what causes feelings to change. Each issue had its own set of questions which were examined and scored independently.

Each story was presented in two parts. In the first part of *The Puppy Story* the protagonist is depicted as experiencing a single basic emotion: the character *loves* the puppy which had just found the protagonist's favourite lost toy. At this point the child is simply asked to identify how the story character feels.

In the first part of *The Kitten Story* the protagonist is depicted as having multiple single valence feelings: he is *sad* because he has lost a loved kitten and he is *angry* that the kitten was lost because of an open window in his bedroom. The child is asked to identify these feelings, and if he connects anger with more than one character to say who he is most angry at (mother self, kitten). The child is questioned as to whether sad and angry are distinct and separate emotions and if the character can feel the two emotions at the same time or separately, and if they mix together or remain separate.

The second part of each story introduces the ambivalent emotion. In *The Puppy Story* (love/anger) the puppy destroys a plane the protagonist has spent a long time building. In *The Kitten Story* (sad/happy) the child is given a replacement kitten for his birthday. For both stories the child is asked to

identify the character's feelings. If the subject did not immediately mention the two contradictory emotions, probe questions were asked to ascertain if the protagonist could be feeling anything else.

At this point, for children whose responses include mention of the two contradictory emotions a series of questions was asked to determine the extent and nature of the understanding of the child. If, in response to the first few questions that followed the second part of each story, the child failed to spontaneously mention the possibility of ambivalent feelings an alternative series of questions was asked to determine whether the child actually had some understanding that the initial "forgotten" emotion could be present.

A separate section of the interview protocols focused on subjects' own theories about how feelings change and the degree of control children have over their emotions. The children were asked: *What makes angry/sad feeling(s) go away? Is there anything children can do to make angry feelings go away? and If angry feelings go away will they come back?* and, if the response to this question is positive, *What will make them come back?*

While *The Puppy Story* was presented as for language normal children, *The Kitten Story* and the experimental task reflected in the interview questions were provided with picture support. This will now be detailed.

Following the introductory procedures (see manual Appendix 1 and page 358 this chapter) and before listening to the taped story the child was shown six black and white cards. Five of these depicted Bill (the story protagonist) with different facial expressions showing the emotions: *sad, happy, angry, OK (neutral), confused*. Each card also had the name of the emotion written on it. The child was asked look at and name each emotion shown on the card. The child was told that he could use the cards to help him answer questions relating to the character he would hear about in the taped story. Instead of saying how the character felt he could point to one or more of the cards. The sixth card had a question mark on it with the phrase *don't know* written underneath. The child was asked to name this card. He was told he could

point to this card if he didn't know the answer to a question. The child was also shown some paper and pencils and told that if he wanted to he could draw the answer to a question rather than answer it verbally.

The child then listened to the audio taped recording of part one of *The Kitten Story*. The child was then asked to re-tell the story in his own words. This could be prompted by the interviewer to clarify any points that were confused or that the child had forgotten. The child could also listen to the story again or have it read by the interviewer. These protocols followed those established by Donaldson and Westerman for typically developing children. The re-telling of the story by the child allowed the interviewer to see how much of the original story the child could remember and sequence and if there were any particular areas of difficulty or confusion.

Once the child had re-told the story in their own words, the interviewer told the story for a third time, placing the story cards drawn to depict the story on the table as she did so. Any particularly significant events could be emphasised by volume and vocal intonation or indicated by hand. For example, in the second part of the story the card which depicted Bill explaining to his parents that the new kitten *just wouldn't be the same as Snowball* had a picture of Bill with two thought bubbles. One contained a picture of Snowball (white fluffy kitten) and the other contained a picture of another kitten (black, short hair). Between the two kittens was an equals sign with a line through it representing *does not equal* i.e. *not the same as* (\neq). As the interviewer said the words *wouldn't be the same as* she pointed to the sign to emphasise its meaning in relation to the story.

Once the story had been re-told using the picture cards the child was asked the interview questions which related to Part one of the story. The protocols were then repeated for Part two of *The Kitten Story*. The story picture cards remained on the table in front of the child throughout the session.

Three questions related to Part one and three questions related to Part two of the story were also supported by pictures. In Part one the questions related to

the same valance emotions *sad* and *angry*. If the child had identified the two emotions he was asked:

Would B feel angry and sad at the same time or first one and then the other?

Three pictures were used to support comprehension of this question: one showed Bill with two heads, one sad and one angry. This picture was placed on the table in front of the subject when the interviewer said the words *same time*. The next picture showed Bill just looking sad and the third picture showed Bill just looking angry. The interviewer placed these pictures on the table in front of the subject as she said the words *first one* (sad picture as this was the most obvious emotion experienced by Bill in the story) *and then the other* (angry picture). The subject was encouraged to look at the pictures and respond verbally or point to the pictures. Once the question had been answered the pictures were put away.

The next question had two picture supports:

Do angry feelings mix together with sad feelings or do they stay separate?

One was a picture of the outline of a body with a heart drawn in it with the two emotions sad and angry mixed together. The other picture had an outline of a body where one half is coloured grey (sad) and the other half is coloured red (angry). The emotions are labelled on both pictures: *sad* and *angry*. Again, the interviewer placed these pictures on the table in front of the subject as she said the question. The pictures were removed once the question was answered.

The third question had one picture support:

When B is angry, do the sad feelings go away?

This showed a body with an angry facial expression. A series of hearts were shown leaving the body. Each heart was coloured grey and had a small sad face inside it. The picture was laid on the table as the question was asked and then removed once the question had been answered.

The three questions in Part two were identical to those in Part one except that they now related to contradictory, rather than same valence, emotions (sad/happy):

Would B feel happy and sad at the same time or first one and then the other?

Do the sad feelings mix together with the happy feelings or do they stay separate?

When B is happy, do the sad feelings go away?

The picture supports were also identical except that *angry* was replaced by *happy* (Appendix 9). The procedures for showing the pictures were also the same. Throughout all the interview questions for both parts of the story the subject was encouraged to look at the story picture cards and facial expression cards in order to support both their receptive and expressive language skills.

Two changes were made to the procedures using the pictures during the course of the research. The first SLI subject to be seen (JD) was introduced to the facial expression cards after the first part of the story had been re-told by the interviewer. He was then asked the interview questions. Although JD displayed no difficulty with this it was subsequently felt that the delay between listening to the story and answering the questions should be kept to a minimum. This would ensure the story sequence was held in the child's auditory memory for as long as possible. Also the explanation relating to facial expression cards might result in an overload of verbal information which

could also interfere with the child remembering the story. For these reasons the facial expression cards were presented and explained to the other three subjects before they listened to the story. The facial expression cards were placed on the table in front of the subjects and remained there throughout the session.

The second alteration to the research procedures occurred in the session with ER. This SLI subject became very distracted, finding it difficult to maintain focused attention on the questions. The last question in the interview is:

Would you feel the same as Bill or different?

To help focus this subject's attention two picture supports were used.

One picture showed Bill with a neutral facial expression. Underneath was a large tick and then the word *same*. The other picture had the same drawing of Bill with a cross through it and the word *different* written underneath. The question was asked and the subject was then encouraged to look at the pictures and either verbally respond or point.

These pictures had originally been drawn to include with all subjects. However, it was subsequently felt that the neutral expression on Bill's face might be misleading for subjects. Also, since subjects' understanding of *same* and *different* would be assessed before the experimental tasks were presented it was felt this question would not pose difficulties. The pictures were therefore not presented to the other three subjects and used only to focus attention with ER.

Scoring criteria

The American manual developed by Donaldson and Westerman to score language normal children's responses to *The Puppy Story* and *The Kitten Story* was used to score the SLI subjects' responses in this third study. The same scoring criteria were used. This had been used to score the data obtained from the language normal children in the first (replication) study. This is detailed in Chapter 2.

The subjects' responses to the structured interview were scored both for their understanding of ambivalent emotion and their ability to understand how feelings change (feeling change score). Children were assigned a level (score) between 0 – 3 both for their understanding of emotional ambivalence and their theories of what makes sad and angry feelings change. This was identical to the scoring system used with the typically developing children for *The Puppy Story* in the second study (Chapter 3). Copies of the complete scoring manuals for both the understanding of ambivalent emotion and the understanding of what makes feelings change, together with examples of typically developing children's responses at the different levels are given in Appendix 3 and Appendix 4.

As the subjects in this third study were identified as having disordered language development discourse analysis was not carried out on their data.

Analysis was carried out in relation to the cognitive-linguistic devices ("tools") the SLI subjects used in their responses to the structured interviews. Five such devices had been identified in the data of the typically developing children: *mental role play*, *mime*, *metaphor*, *personal experience* and *folk psychology*.

The same conventions and colour coding system were used to identify the devices in the subjects' transcripts as had been used in the second study. One of the Speech and Language Therapists who had acted as an independent rater in the second study agreed to act as a rater for this third

study. She was asked to note if she found any devices used by the SLI children that were different to those categorised in the language normal data. No such devices were noted.

Data reduction

Verbatim transcripts were prepared by the researcher from audio tapes of the interviews. These were checked against the video recordings. The transcription conventions used for the second language normal study were used in this third SLI study (Chapter 3).

There were two transcripts for each subject. These were the structured interviews for *The Puppy Story* and *The Kitten Story* and contained the following sections:

Part 1 of *The Puppy Story* interview (introduction and feelings of love)

Part 2 of *The Puppy Story* interview (which related to ambivalent feelings: love/anger)

Part 3 of *The Puppy Story* interview (which related to emotional causality i.e. how feelings change)

Part 1 of *The Kitten Story* interview (introduction and sad/angry feelings)

Part 2 of *The Kitten Story* interview (which related to ambivalent feelings: sad/happy)

Part 3 of *The Kitten Story* interview which related to emotional causality i.e. how feelings change)

As in the first and second studies (Chapters 2 and 3) the researcher assigned an ambivalence score (0-3) to the transcripts relating to the level of the child's understanding and ability to resolve emotional ambivalence. In assigning a level several features of the subjects' responses were considered e.g.:

- How much probing was required before the subject identified the presence of two feeling states.

- How the subject dealt with the questions about time (feelings experienced simultaneously vs. sequentially) and space (feelings as mixed up or separate) to determine the extent of the child's knowledge that it is possible to experience two feelings at the same time towards the same target.
- The degree to which subjects' recognised that conflicting feelings can interact and influence one another.
- How the subject understood the relationship between events and feelings.

For the SLI subjects the first consideration was especially pertinent and a major issue throughout their entire transcripts. Donaldson and Westerman are very clear that an assigned level should not be linked to specific responses to specific interview questions, but that the quality of the entire transcript should be taken into account. The interview protocols allow for prompting of the child's memory and with the emphasis on eliciting the child's most advanced thinking. For children presenting with both disordered receptive and expressive language skills this could result in a significant level of prompting and rephrasing by the interviewer. It was important when assigning levels to be aware when prompting was used by the interviewer to help a child demonstrate their existing knowledge or when it resulted in leading the child towards an answer incompatible with their general level of emotional understanding. For this reason it is recommended that interviewers and scorers both have experience of working with language disordered children.

It should also be noted that Donaldson and Westerman explicitly state that it is possible for a child to convey mature, sophisticated understanding of emotions which would be scored at level 3 using simple language:

Do not equate the length of the data or its verbal sophistication with a

high ambivalence level score. Very short answers can warrant a Level 3 score while long statements can reflect Levels 0 or 1 thinking.

Ambivalence Level Scoring Manual Appendix 3

The SLI subjects were therefore not penalised if their language consisted of short, relatively simple phrases or if they chose to express their answers to *The Kitten Story* by pointing to the pictures or using drawing.

As the final determinant, assessments of the entire SLI subjects' transcripts were matched to one of the profiles used to define the ambivalence levels as provided by Dr. Westerman, the second author of the American study. These profiles are reproduced in Appendix 3. When difficulty was encountered in deciding between levels, scores were made conservatively in favour of the lower level. This was based on the design of the protocol which was weighted towards eliciting subjects' most advanced thinking. This was consistent with the protocols used to assess the language normal children's data.

Each SLI subject had the following scores:

- 1 level for understanding emotional ambiguity (*The Puppy Story* part 2)
1 level for causal theories of emotion (*The Puppy Story* part 3)
- 1 level for understanding emotional ambiguity (*The Kitten Story* part 2)
1 level for causal theories of emotion (*The Kitten Story* part 3)
- The total number of cognitive-linguistic devices used per story interview part and identified under the following headings:
 - *Mental role play*
 - *Metaphor* (also the type used see below)
 - *Mime* (also the type used see below)
 - *Personal Experience*
 - *Folk Psychology*

Analysis of Metaphors and Mimes

In the second study the language normal children's use of *metaphor* and *mime* had been recorded (numbers). Since in typically developing children metaphor is known to change with age (development) the *metaphors* of the typically developing (study 2) and language impaired children were categorised according to type. The following provides an example of each type of *metaphor* identified in the children's transcripts. The type of *metaphor* was classified according to the imagery used by the child. This allowed direct comparison between the type of *metaphor* used by the typically developing children and the language impaired children.

Different types of mime had also been noted in the data of the language normal children. The typically developing children and language impaired children's use of mime was therefore also categorised according to type in order to investigate differences between the two subject groups. These categories are explained below after those relating to *metaphor*.

Metaphor

Examples of types of *metaphor*

Spatial

loving on the inside of her body and angry on the outside

Disappearance

..Probably just..fade away because..um..he'll fo'..give Pepper..and if..say sorry about he was angry.

Transformation

..They turned to angry.

Forces

Feel like one's pulling you..and..then another's pulling you back.

Tactile

Interview question: *How would Mike look at Pepper if he loves him?*

Response: *Softy.*

Temperature

..she might feel cold hearted on Pepper she might feel warm hearted on another friend.

Pressure

..but it don't let smoke blow out your ears.

Trap

Interview question: *How would Molly feel?*

..Well its like..sort of caught like.

Break

Its like phew (sigh)..its like..its like a cliff but its falling down. (gestures with hands) The hearts going down..its breaking up.

Balance

'Cos when he wasn't that angry but he was angry..he wouldn't be..his face would be in the middle of the angry..face and the ha'..the really angry face.

Fluid

And she just full with all anger and hate jus' filling her and sh' all the goodness is being pushed right down.

Inner voice

..First when she feels angry and she just sees all..her paintings have been ripped and then something tells her to stay back after..the anger.

Machine (out of control)

So..like your brain would be going..and you're getting all muddle up and everything.

External characteristics

angry like a lion

Scoring criteria

An utterance could contain more than one image. For example in the following single utterance, 3 separate metaphors were identified:

(the feelings have)..gone into another person not another person so she might feel cold hearted on Pepper she might feel warm hearted on another friend. (the warm loving feelings)

This utterance contains one Spatial *metaphor* where the feelings are described as having a specific location (the body): gone into another person and two Temperature *metaphors*: cold hearted on Pepper and warm hearted on another friend.

However, the following is classed as just one *metaphor* as the imagery used is considered to be all part of the one description:

Its like phew (sigh)..*its like*..its like a cliff but its falling down. (gestures with hands) The hearts going down..its breaking up.

Mime

Examples of types of mime

Verb/gesture. This was the simplest type of mime. It was used by children to illustrate a verb used to describe a single action. For example one of the younger typically developing boys explained how Mike would be cross at Pepper and stop throwing toys for him. This subject mimed *throwing*.

Facial Expression. This was used by subjects in response to questions such as: *How did Mike look at Pepper when he was angry?* Instead of replying verbally the subject mimed the required facial expression.

Emotional behaviour. This is where the subject mimed behaviour associated with a specific emotion. For example one of the younger typically developing girls responded to the question: *Any other ways that Molly could show her angry feelings?* by saying: *Um..putting her arms on her hips going like that.* She then put her hands on her hips and mimed being cross.

Illustrates story. This is where a *mime* is used as part of a short “mini” story told by the subject to support their reply to a question. For example, ER, one of the SLI children replied to the question: *Is there anything that children can do to make their angry feelings go away?* by talking about how Mike and his dog Pepper could do things for each other which would make the bad feelings go away. Mike is described as doing the dog’s writing for him and then Pepper could do a painting for Mike using his paws. As part of this mini story about Mike and Pepper the subject ER mimed the dog using his paws to paint a picture. This type of *mime* is always used in the context of a narrative depicting a sequence of events and extends over more than one utterance by the subject

Mental role play. This is where a *mime* was used in the context of, or as an immediate prelude to, *mental role play* where the subject responded to a question in the character of one of the story protagonists.

Data Analysis

The aim of this third study was to explore possible differences in the data of SLI children and typically developing children. Since each subject had a different profile of language development the study did not treat the results as group scores but rather looked at each individually to consider which aspects of language impairment might be related to delay or difficulty with emotional development.

Analysis was in the form of direct comparison with the language normal data in terms of:

- The ambivalence level scores obtained by the SLI subjects
- The emotional causality scores obtained by the SLI subjects
- The number and type of cognitive-linguistic devices used by the SLI subjects.

Information regarding the SLI subjects' linguistic strengths and weaknesses obtained by the *CELF UK 3* and *TOWK* was also used when considering the effects of language deficits on the performance of the experimental tasks.

Differences between the data obtained from the typically developing children and the language impaired children were then viewed in the light of knowledge gained from the detailed case histories of the subjects obtained from:

- Clinical Speech and Language Therapy notes and information from clinicians.
- Informal interview with parent(s) and school staff.
- *The Pragmatics Profile of Everyday Communication Skills in School-Age Children* by Dewart and Summers (1995). *The Parent's Report*

Form (based on The Achenbach Teacher's Report Form).

- *The Achenbach Teacher's Report Form.*

Please see Appendix 12 for a summary of the information obtained from the parental interviews.

Inter-rater reliability

One of the two Speech and Language Therapists who provided inter-rater reliability scores for the second study also agreed to act as an independent rater for this third SLI study. This rater was not connected in any other way with this research. All the SLI subjects who took part in this study were previously unknown to this rater.

No significant differences were found between this author's transcription and that of the independent rater.

No differences were found between the scores assigned for either of the stories for:

- emotional ambivalence
- emotional causality
- the number and type of cognitive-linguistic devices identified in the SLI data

Neither the researcher nor the independent rater identified any cognitive-linguistic devices in the SLI data which did not fit into one of the five categories already identified in the language normal children's data. Namely: *mental role play, mime, metaphor, personal experience and folk psychology.*

Both the independent rater and the researcher experienced difficulties ascribing levels of understanding for ambivalent emotions to the subject ER (*The Puppy Story* and *The Kitten Story*). This subject's data was discussed between these two scorers and then a mutually agreed level was given for each story. All the other subjects' data was scored independently by the two raters.

RESULTS

Validity of results

Given that the SLI subjects were taking part in a series of verbal interviews it is important to consider the validity of the results.

The set of criteria established to check the validity of the data obtained through the interviews is given in the Method section of this chapter. The first criterion was the ability of the SLI subjects to remember and repeat the stories heard on the audio tapes. For *The Puppy Story* subjects re-told the story after they heard the tape recoding. For *The Kitten Story* the subjects were required to re-tell the story after they had listened to the taped recording and before the researcher narrated the story with the picture supports.

Three out of the four SLI subjects, (JD, AB, GG) coped well with re-telling the stories and required little, if any, prompting by the researcher. JD (C.A. 13. 2) had both parts of both stories read to him by the researcher after listening to them on the audio tapes. He then re-told the stories with a reasonable to good level of descriptive detail.

AB (C.A. 11.9) required only the second part of *The Puppy Story* to be read to him by the researcher. He was able to relate the sequence of events for both stories although these were low on descriptive details, apart from Part 2 of *The Kitten Story* which contained a reasonable to good level of detail.

GG (C.A. 9.10) was able to re-tell all parts of both stories after listening once to the audio recordings. He was able to use Wh questions to confirm with the researcher various facts in the stories. Although both parts of *The Puppy Story* were low on descriptive details GG demonstrated the ability to convey reasonable to good levels of descriptive detail in *The Kitten Story*, especially part 2.

Overall JD (C.A. 13.2), AB (C.A. 11.9) and GG (C.A. 9.10) presented with similar recounting skills to those used by the 7 – 8 year old typically developing children. All the supports used by the researcher: allowing subjects a second listen of the story, and using or replying to Wh questions were admissible by the American protocols.

The fourth subject, ER (C.A. 9.3), presented with the most impaired language development and experienced difficulties in recounting the stories. He was able to ask the researcher if he could listen to Part 1 of *The Puppy Story* for a second time. However he then required considerable prompting by the researcher in the form of Wh questions to complete the re-telling.

ER was able to re-tell Part 2 of *The Puppy Story* after listening only once to the audio recorded story. His re-telling was more fluent than for that of Part 1 with a reasonable level of descriptive detail. However ER persistently changed the ending of the story avoiding ambivalent emotion. He accepted the correct ending when it was re-told by the researcher.

ER was able to re-tell Part 1 of *The Kitten Story* after listening only once to the audio recording. He required some prompting by the researcher using Wh questions but was able to convey a reasonable level of descriptive detail.

ER also required just one listen of Part 2 of *The Kitten Story* before retelling it without prompting by the researcher. However, as with Part 2 of *The Puppy Story*, ER changed the ending of *The Kitten Story* avoiding the ambivalent emotion. He was very resistant to accepting the actual ending until the audio tape recording of the story was re-played.

Overall, ER's expressive language difficulties meant that he required more prompting and support in re-telling the stories than that required by the 7 – 8 year old typically developing children. However, all the prompts used were permitted by the American protocols.

The re-telling of the stories by the language normal subjects in the first (replication) study had not been audio tape recorded as this had not been a necessary requirement of the original American procedures. However, the researcher had kept pencil notes of the type and frequency of support required by these subjects. Although it is acknowledged that the robustness of these recordings cannot be validated, ER's ability in re-telling the stories appeared similar to that of the 4 – 5 year old subjects in the replication study (Chapter 2).

The changing of the ending of the stories avoiding ambivalent emotion had not been a feature of the typically developing British subjects' data in study 2 (age range 7 – 11 years). However, it was mentioned in the American manual where it was associated with responses typical of the youngest (4-5 year old), or the least emotionally mature children (see Appendix 3 page 596).

Both the researcher and the independent rater were satisfied that ER's understanding of both stories was sufficient to obtain valid responses from the interview questions. None of ER's replies to the interview questions suggested that he was experiencing difficulties due to his lack of knowledge or memory of the story events.

The other criteria used to validate the SLI data related to the quality of the transcriptions obtained, the degree of listening and attention demonstrated by the subjects and the relevance of the responses given to interview questions.

Overall the audio taped interviews of the SLI subjects were easier to transcribe than those of the 7 – 11 year old typically developing subjects with few instances of corrupted (unintelligible) expressive language. JD, AB and GG all demonstrated good listening and attention skills throughout all of the interview sessions. They were able to stay on topic and although some of their responses to the questions relating to ambivalent emotion could be contradictory this was similar to the responses of the 7 – 8 year old, or less emotionally mature, language normal subjects. There was no difficulty in relating the replies of these three SLI subjects to the profile of responses

given in the American manual for either the Emotional Ambivalence or Feeling Change levels.

ER demonstrated good concentration while listening to the audio taped stories. However, he experienced difficulties understanding the interview questions which resulted in him employing a number of distraction techniques similar to those used by the 4 – 5 year old language normal subjects during the replication study. Like these very young typically developing children, ER's difficulties appeared to be related to the nature of the (complex) knowledge and information demanded by the questions rather than the linguistic complexity of the questions per se.

In support of this, ER's responses to questions could be matched to examples of typically developing children provided by the American manuals. What was inconsistent with that of language normal children was the range of responses recorded. ER's replies to questions related to all of the levels of emotional maturity outlined in the American model with no apparent awareness of the extreme internal contradictions this created. Typically developing children tended to have responses from adjacent levels indicating the child was in transition between different stages of understanding. The lack of coherence in ER's data made it difficult to score in terms of his understanding of emotional ambivalence and understanding of what makes feelings come and go. This was discussed with the independent rater and a "best fit" was agreed.

The medium of a verbal interview for gathering data was supportive of all four of the language impaired subjects since it allowed for questions to be rephrased and for any confusions or misunderstood responses to be checked out by both the researcher and the subject. This was permitted by the American protocols.

The results obtained relate to small numbers in the case of the language impaired data and these are compared with the larger samples for the language normal children. The studies of the language normal children

provided a comparison group (and not a control group) for the four language impaired children. These four children cannot be regarded as a representative group of SLI children in general, but as examples of children from a heterogeneous diagnostic group. It is therefore not possible to generalise the results from the language impaired children's data. However, this data was examined thoroughly and systematically and the findings were suggestive and could be verified by further exploration of other language impaired children's responses to the experimental procedures.

An example of the transcript of one of the SLI subjects is provided in Appendix 11. The comparison of the SLI subjects' replies to interview questions with those of typically developing children, and the implications of the findings presented in these Results, are explored in greater detail in the Discussion section of this chapter.

Presentation of Results

Results are presented under the following headings which address the specific aims of this third SLI study:

1. The extent to which the SLI subjects followed the same rate and pattern of emotional development as the language normal subjects. Specifically their understanding of ambivalent emotions and their understanding of what makes feelings come and go.
2. The extent to which the SLI subjects followed the same use of cognitive-linguistic devices as the language normal subjects.
3. A comparison of SLI and language normal children's abilities to differentiate sad/angry feelings in Part one of *The Kitten Story*.

Although investigating the SLI subjects' ability to differentiate sad/angry feelings in *The Kitten Story* was not one of the original aims of this third study, data obtained provided additional information on the children's emotional development as compared to language normal children.

The results presented in this section are explored in relation to the SLI subjects' individual language profiles in the Discussion section of this chapter.

1. The extent to which the SLI subjects followed the same rate and pattern of emotional development as the language normal subjects (Emotional Ambivalence Level scores and Feeling Change Level scores).

Two areas of analysis were used to compare the SLI children's performance with that of the typically developing children.

- I. SLI children's understanding of emotional ambivalence and theories of emotional causality for *The Puppy Story* compared to typically developing children's understanding from the second study (Chapter 3).
- II. SLI children's understanding of emotional ambivalence and theories of emotional causality for *The Kitten Story* compared to:
 - a. their understanding of *The Puppy Story*.
 - b. typically developing children's understanding from the second study (*The Puppy Story* only, Chapter 3).
 - c. typically developing children's understanding from the first study (*The Puppy Story* and *The Kitten Story*, Chapter 2).

I. SLI children’s understanding of emotional ambivalence and theories of emotional causality for *The Puppy Story* compared to typically developing children’s understanding from the second study (Chapter Three).

Table I.1. shows the Emotional Ambivalence Level scores and Feeling Change Level scores obtained by the SLI subjects for *The Puppy Story* using the scoring criteria established by the American authors Donaldson and Westerman (1986).

Table I.1.

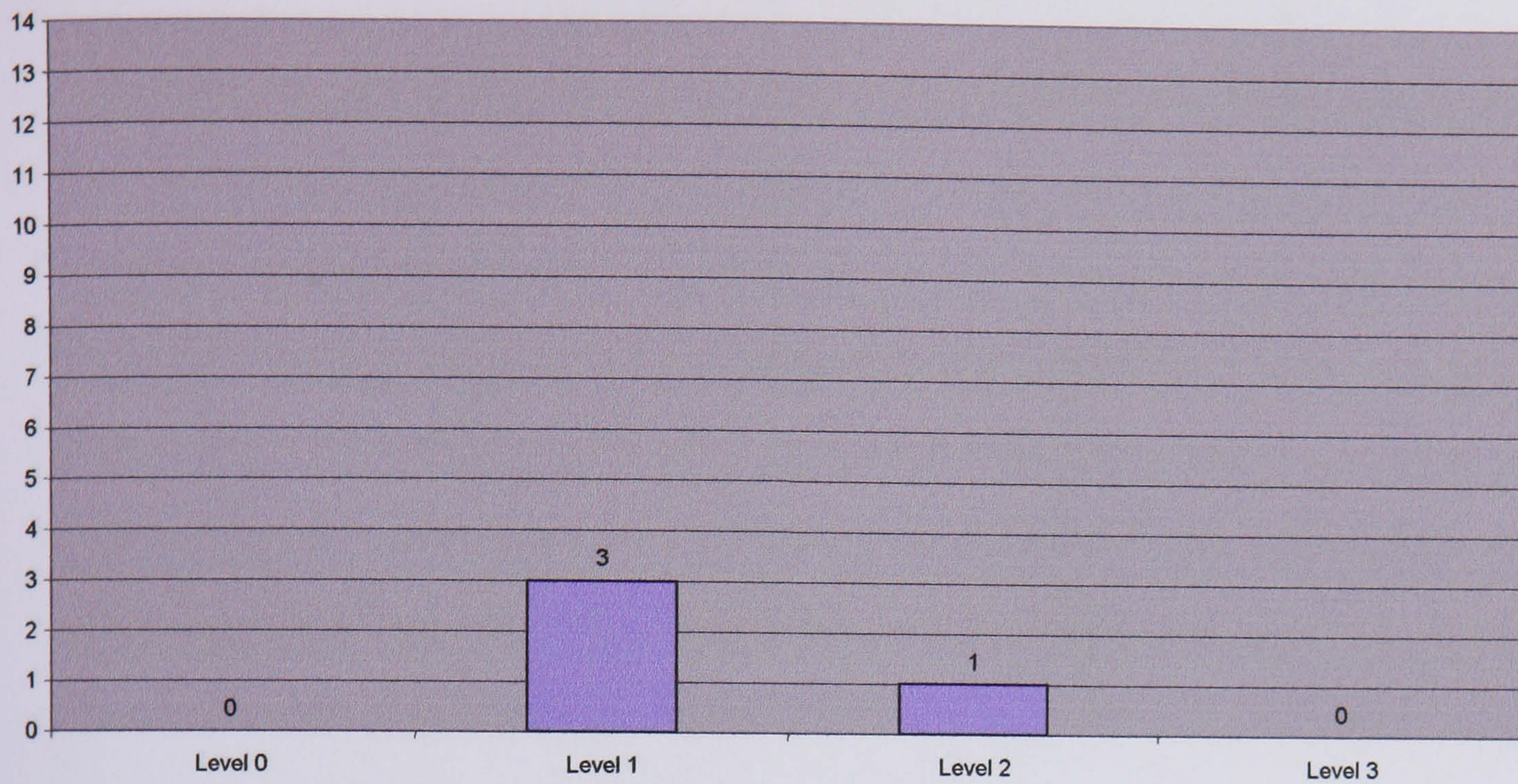
Subject:	J.D.	A.B.	G.G.	E.R.
C.A.:	13.2	11.9	9.10	9.3
Puppy Story				
EAL:	1	1	1	2
FCL:	2	1	2	1

Table I.1. Emotional Ambivalence Level scores (EAL) and Feeling Change Level scores (FCL) for all SLI subjects for *The Puppy Story*.

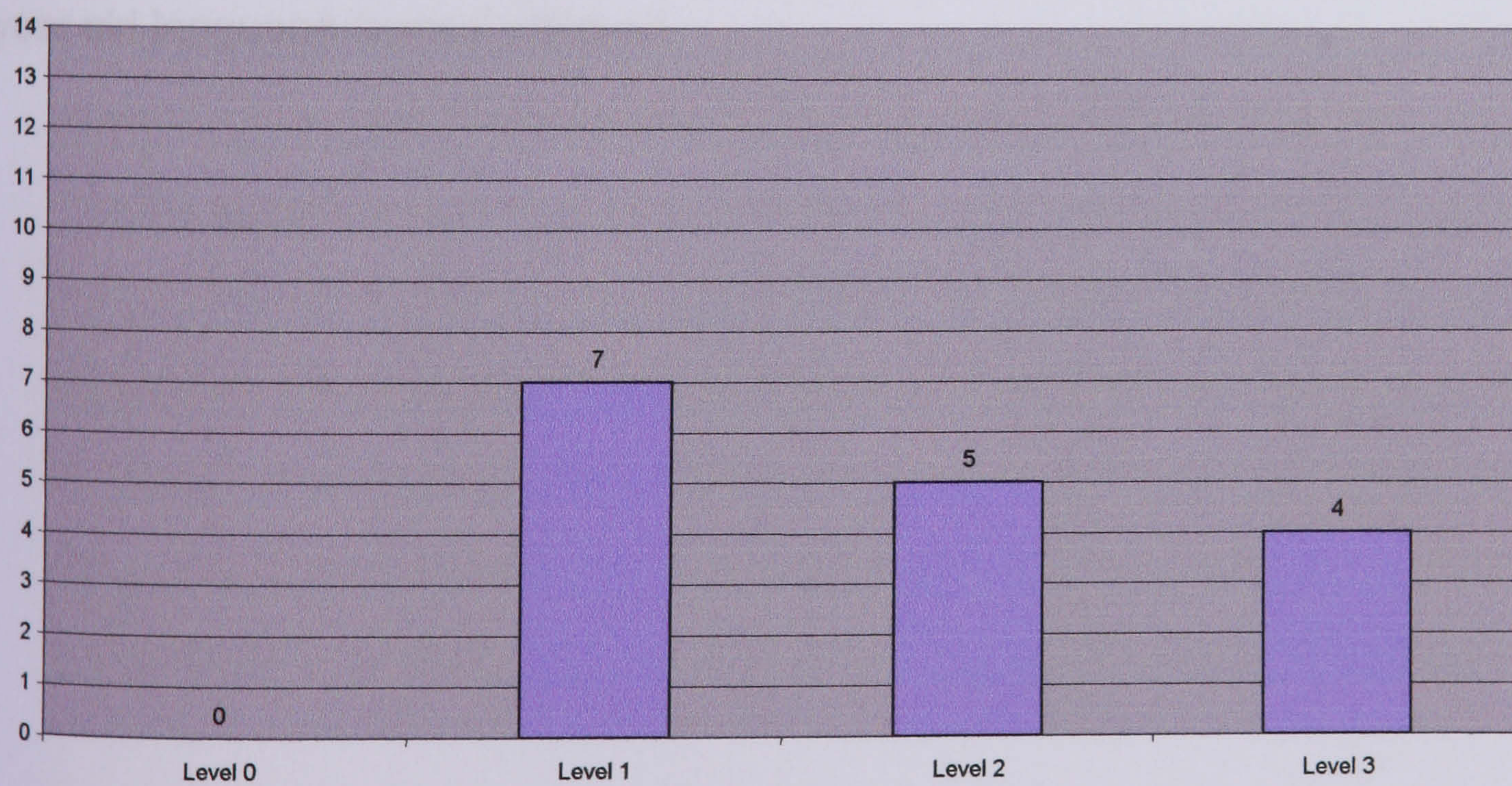
Understanding Emotional Ambivalence

The following bar charts (I.1 – I.3) show the number of SLI and typically developing children scoring at each level for their understanding of emotional ambivalence in *The Puppy Story*. The typically developing children’s scores are grouped according to age (7 – 8 years and 10 – 11 years).

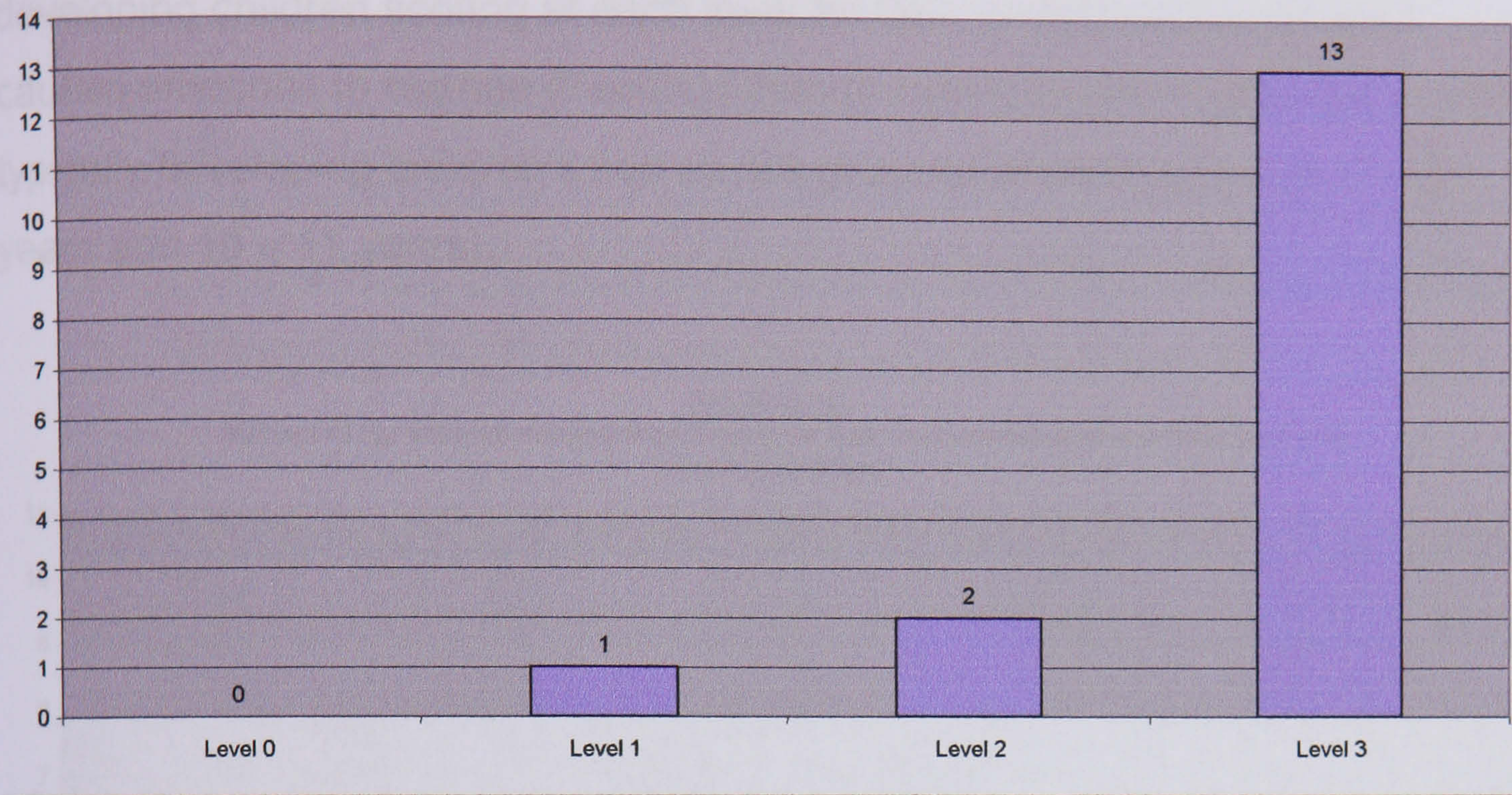
Bar Chart I.1.
Number of SLI subjects scoring at each level for their understanding of emotional ambivalence
(*The Puppy Story*)



Bar chart I.2.
Number of Language Normal subjects scoring at each level for their understanding of emotional
ambivalence at age 7 - 8 yrs (*The Puppy Story*)



Bar Chart I.3.
Number of Language Normal subjects scoring at each level for their understanding of emotional ambivalence at age 10 - 11 years (*The Puppy Story*)

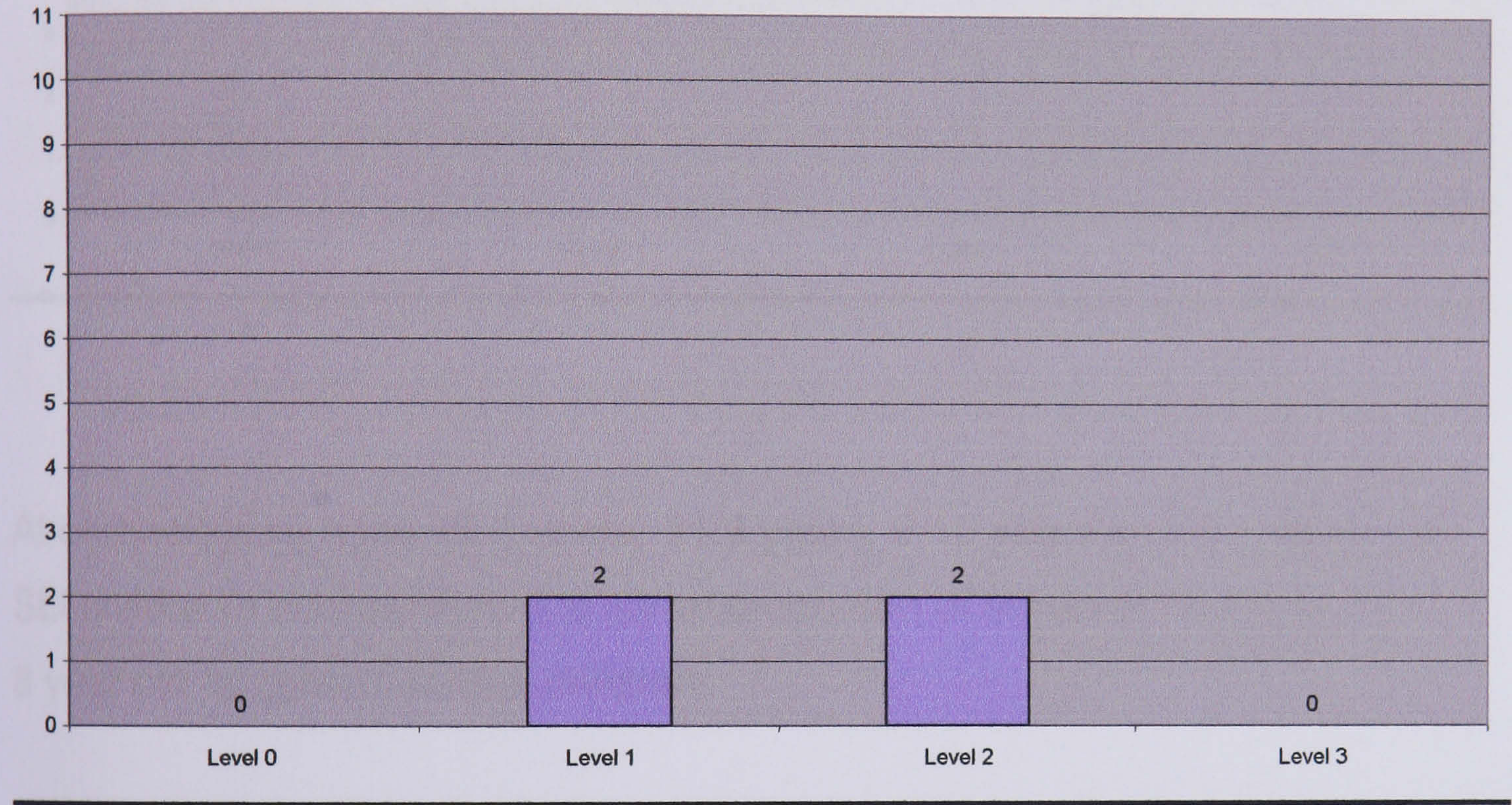


The SLI children's scores most closely resembled those obtained by the 7 – 8 year old typically developing children with the greatest number of scores at Level 1. However, the SLI children had fewer of the higher level 2 & 3 scores than these younger language normal children. This suggests the SLI children were towards the less mature range of emotional ability presented by 7 – 8 year old language normal children.

Understanding What Causes Emotions to Change

The following bar charts (I.5 – I.7) show the number of SLI and typically developing children scoring at each level for their understanding of what causes emotions to change (Feeling Change Level) in *The Puppy Story*. The typically developing children’s scores are grouped according to age (7 – 8 years and 10 – 11 years).

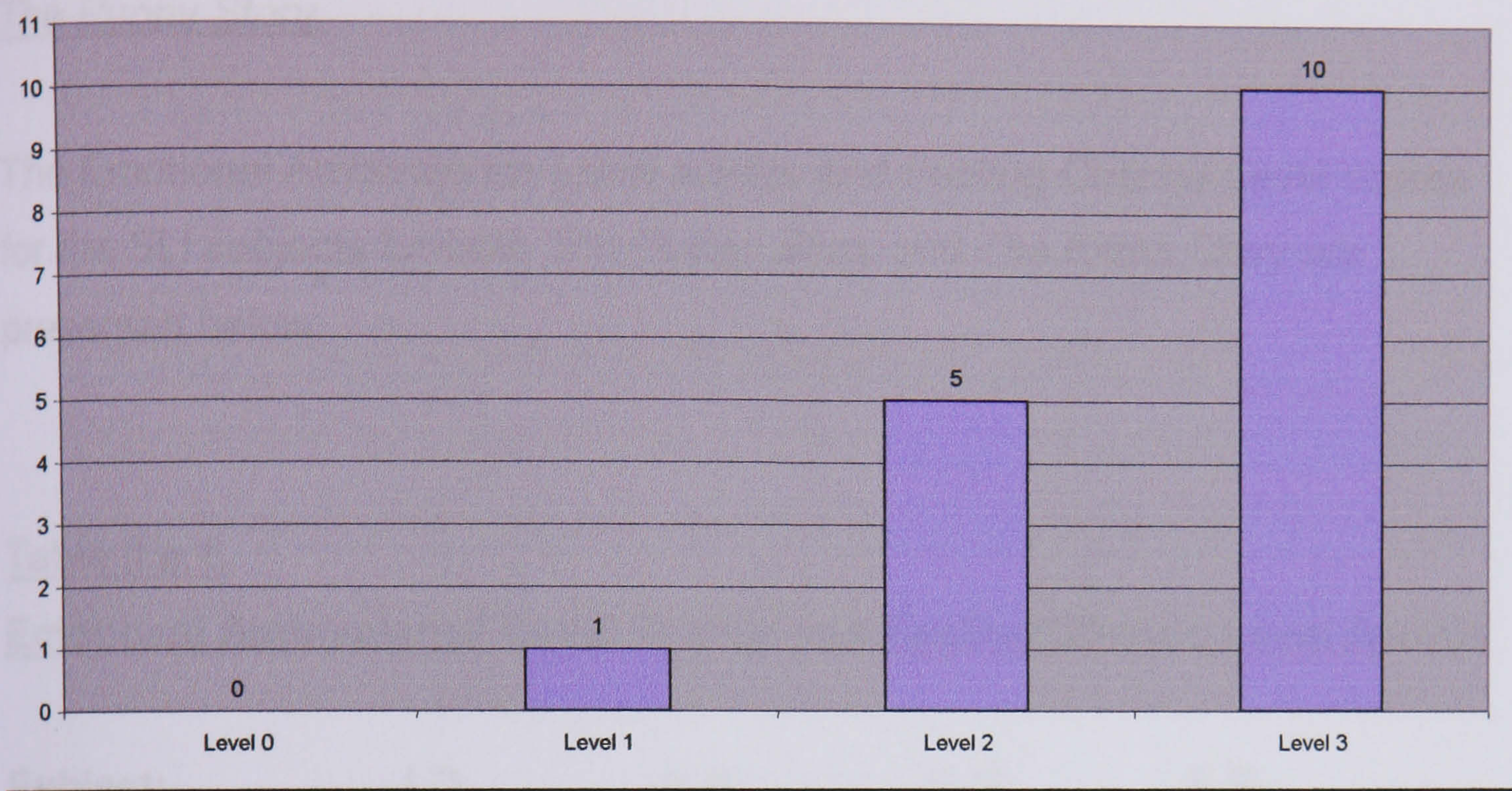
Bar Chart I.5.
Number of SLI children scoring at each level for their understanding of emotional causality
(*The Puppy Story*)



Bar Chart I.6.
Number of 7 - 8 year old Language Normal subjects scoring at each level for their understanding of
emotional causality (*The Puppy Story*)



Bar Chart 1.7.
Number of 10 - 11 year old Language Normal subjects scoring at each level for their understanding of emotional causality (*The Puppy Story*)



At chronological ages 13.2 years, 11.9 years, 9.10 years and 9.3 years, the SLI children's scores show the same proportion of achieved levels as the 7 – 8 year old language normal children.

The SLI children (C.A.'s 13. 2, 11.9, 9.10 and 9.3) thus showed a similar level of understanding of what causes emotions to change to that of the younger (7 – 8 years) typically developing children.

II.a. SLI children’s understanding of emotional ambivalence and theories of emotional causality for *The Kitten Story* compared to their understanding of *The Puppy Story*.

The Emotional Ambivalence Level scores and Feeling Change Level scores for the SLI subjects for both *The Puppy Story* and *The Kitten Story* are presented below:

Table II.a.1.
Emotional Ambivalence Level Scores and Feeling Change Level Scores

Subject:	J.D.	A.B.	G.G.	E.R.
C.A.:	13.2	11.9	9.10	9.3

Puppy Story

EAL:	1	1	1	2
FCL:	2	1	2	1

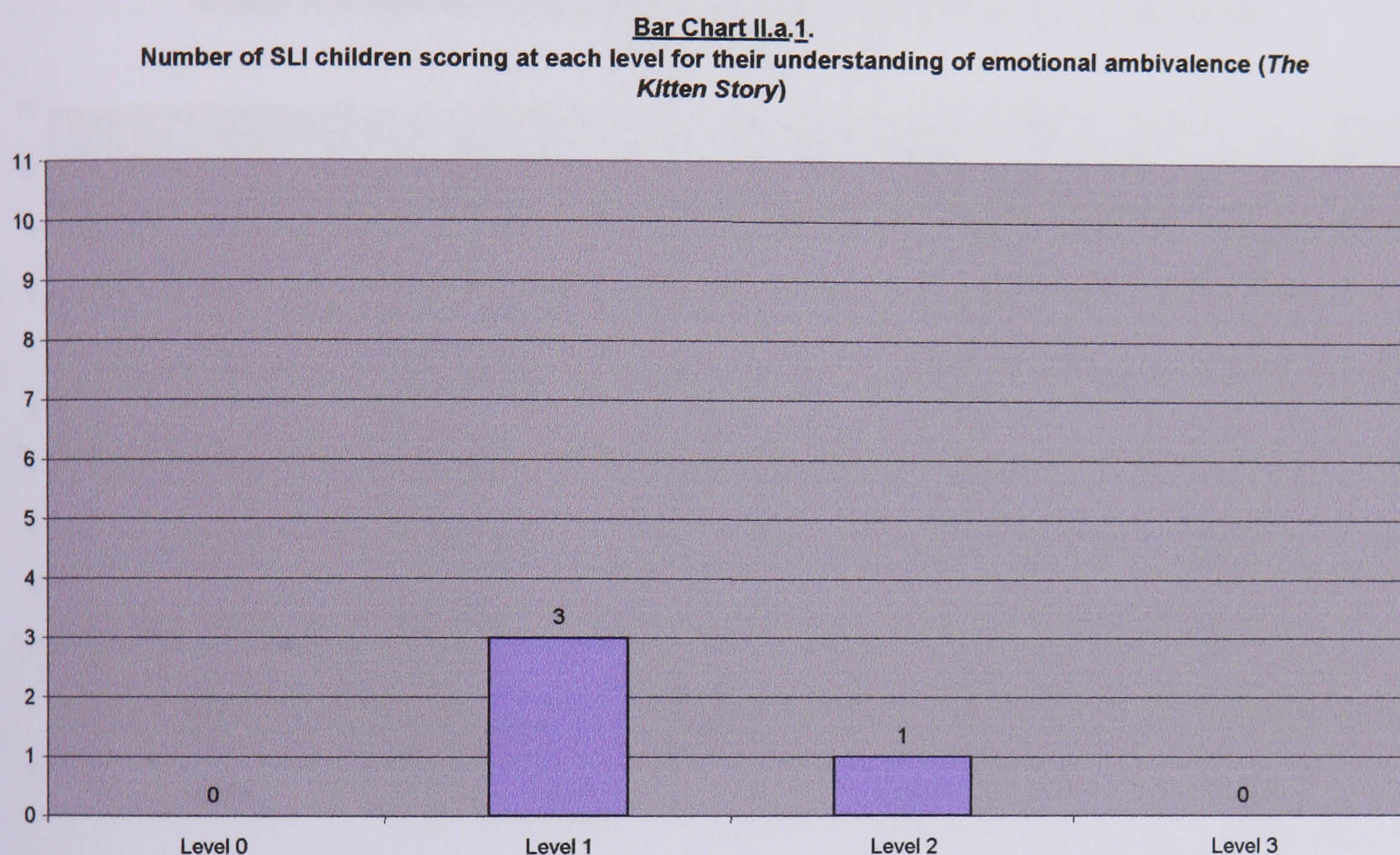
Kitten Story

EAL:	1	1	2	1
FCL:	1	1	1	1

Table II.a.1. showing the Emotional Ambivalence Level scores (EAL) and Feeling Change Level scores (FCL) for the SLI subjects for both stories.

Understanding Emotional Ambivalence

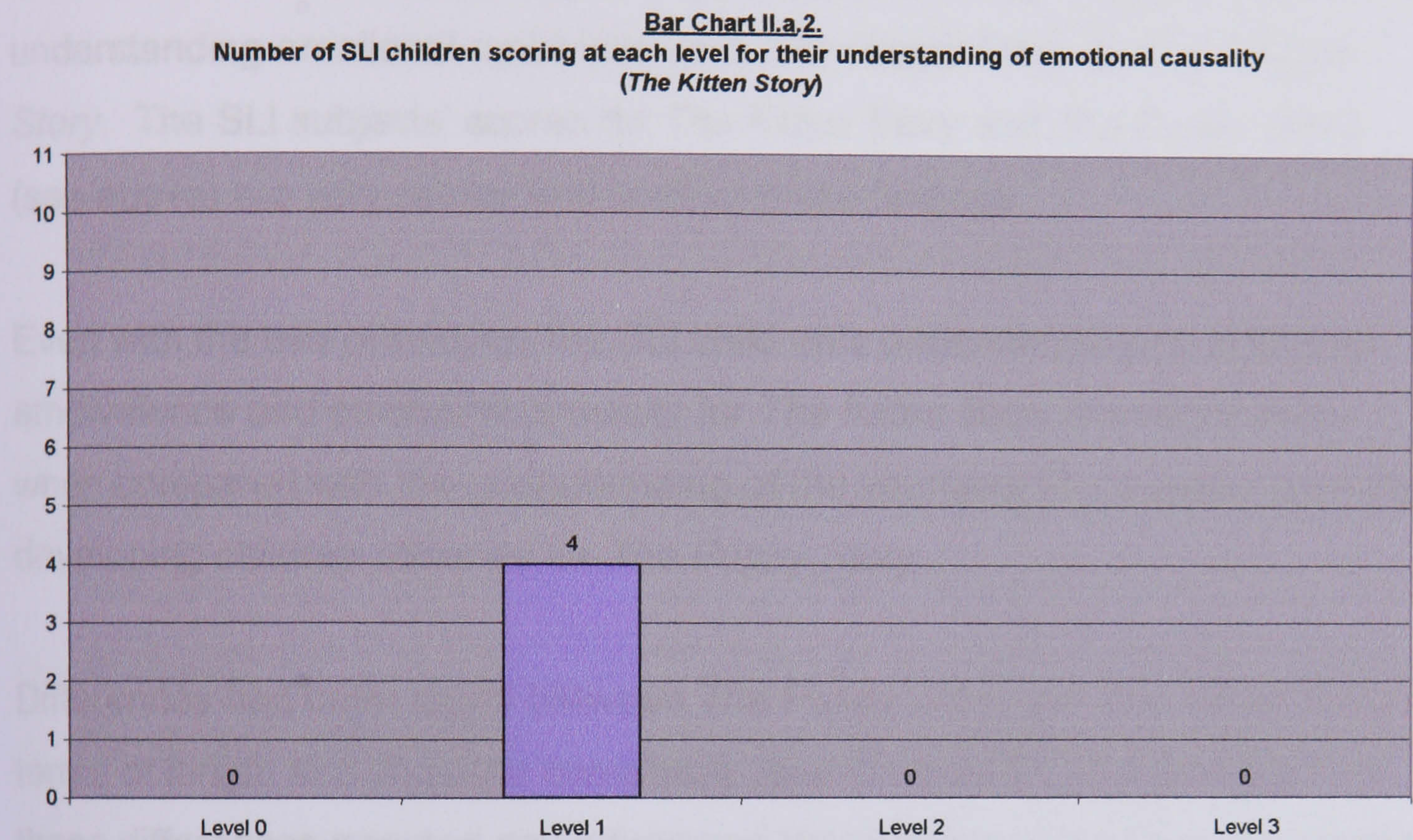
Bar chart II.a.1. below shows the number of SLI children scoring at each level for their understanding of emotional ambivalence in *The Kitten Story*.



The above chart show that as a group the SLI children obtained identical scores for *The Kitten Story* and *The Puppy Story* for their understanding of emotional ambivalence. (See page 388).

Understanding What Causes Emotions to Change

Bar chart II.a.2. below shows the number of SLI children scoring at each level for their understanding of what causes emotions to change in *The Kitten Story* (emotional causality)



In *The Kitten Story* all the SLI subjects achieved a Level 1 for their understanding of what causes emotions to change. Overall this represents slightly lower scores achieved by the SLI children for *The Kitten Story* than *The Puppy Story*. For *The Puppy Story* half of the scores were at level 1 and half were at level 2 (page 390).

In conclusion the similarity, or only marginally lower, scores obtained by the SLI children for *The Kitten Story* and *The Puppy Story* indicate that these subjects' understanding of emotional ambivalence and emotional causality was not helped by the addition of the picture supports for *The Kitten Story*.

II.b. Comparison of the SLI subjects' scores for *The Kitten Story* with the typically developing children's scores for *The Puppy Story* in Chapter 3.

Although the second study (Chapter 3) did not include *The Kitten Story* both the original American study and the British replication study (Chapter 2) found no statistical difference between the typically developing subjects' scores for understanding emotional ambivalence in *The Puppy Story* and *The Kitten Story*. The SLI subjects' scores for *The Kitten Story* and *The Puppy Story* (see above) are very similar and confirm these findings.

Even with the use of pictures the SLI children's understanding of emotional ambivalence and emotional causality for *The Kitten Story* showed a delay when compared with the understanding of the youngest (7 - 8 years) typically developing children obtained for *The Puppy Story*.

Differences had been found between *The Puppy Story* and *The Kitten Story* in terms of length and linguistic complexity (see Chapter 3). It is possible that these differences negated any advantage the pictures might have represented for the SLI children. This is explored further in the Discussion section of this chapter.

II.c. Comparison of the SLI subjects' scores for *The Kitten Story* and *The Puppy Story* with the typically developing children's scores from the replication study (Chapter 2).

The replication study presented in Chapter 2 provided information from typically developing children on their performance for both *The Puppy Story* and *The Kitten Story*. **Table II.c.1.** below shows the scores obtained by the language normal children for the two stories.

Table II.c.1. Ambivalent Emotion Level scores and Feeling Change Level scores obtained by typically developing children in the replication study (Study 1) and SLI children (Study 3)

Puppy Story					Kitten Story				
<u>Ambivalent Emotion Level</u>					<u>Ambivalent Emotion Level</u>				
4-5 yrs:	0	0	1	1	0	0	0	1	
7-8 yrs:	1	1	2	2	1	1	1	2	
10-11yrs:	2	2	3	3	2	2	3	3	
SLI	1	1	1	2	1	1	1	2	
<u>Feeling Change Level</u>					<u>Feeling Change Level</u>				
4-5 yrs:	1	1	1	2	1	1	1	1	
7-8 yrs:	1	2	2	2	1	2	2	3	
10-11yrs:	2	3	3	3	2	2	3	3	
SLI	1	1	2	2	1	1	1	1	

Table II.c.1. showing ambivalent emotion level scores and feeling change level scores for both stories for all 4 typically developing subjects in each of the 3 age groups and SLI children.

The above results show that for all three age groups of language normal children both the ambivalent emotions level scores and the feeling change level scores were similar for each of the two stories. In addition, for each of the two stories, and for all three age groups, the Feeling Change Level scores tended to be slightly higher than the Ambivalent Emotion Level scores.

For the SLI results this slight difference between the emotional ambivalence level scores and the feeling change level scores was found only in *The Puppy Story*. For *The Kitten Story* the two areas of emotional understanding were at a similar low level. The SLI children thus performed marginally *better* for their understanding of what causes emotions to change and at a similar level for their understanding of emotional ambivalence in *The Puppy Story*. This again confirms that the SLI children were not helped by the pictures provided for *The Kitten Story*.

Comparison of the SLI subjects' scores (age range 13.2 yrs – 9.3 yrs) for *The Kitten Story* with those of the typically developing children above shows that their scores for understanding ambivalent emotions are most like the 7 – 8 year old typically developing children. 3 out of the 4 typically developing children scored at level 1 and only 1 language normal child scored at level 2. 3 out of the 4 SLI children scored at level 1 and only 1 language impaired child scored at level 2.

The SLI children's scores for understanding what causes feelings to change are most like those of the 4 – 5 year old typically developing children. All of the typically developing 4 - 5 year old children obtained level 1. All of the language impaired children also obtained level 1.

Even with the provision of picture supports for *The Kitten Story* the SLI children's understanding of ambivalent emotion and what causes emotions to change remained less mature for their age in comparison to the language normal children in the first study.

Summary of Results (1)

- The SLI subjects' receptive and expressive language difficulties did not invalidate the data gathered through the verbal interviews.
- For *The Puppy Story* the Emotional Ambivalence Level scores and Feeling Change Level scores of the SLI subjects (C.A. 13.2 years, 11.9 years, 9.10 years 9.3 years) were most like those obtained by the least mature of the younger (7 – 8 year old) typically developing children in study 2. This represents a delay in the emotional maturity of the SLI children.
- The addition of picture supports did not help the SLI children achieve better scores for *The Kitten Story* than *The Puppy Story* for either their understanding of emotional ambivalence or what causes emotions to change. Their scores for both these areas of emotional understanding remained immature for their age when compared to :
 - typically developing children's scores for *The Puppy Story* in Study 2
 - typically developing children's scores for *The Kitten Story* in Study 1.

2. The extent to which the SLI subjects followed the same use of cognitive-linguistic devices as the language normal subjects.

Four levels of analysis investigated the cognitive-linguistic devices used by the SLI subjects:

- I. The mean number of cognitive-linguistic devices used by the SLI children in comparison with the typically developing children.
- II. A comparison of the total number of cognitive-linguistic devices used per story interview part by the SLI children and the typically developing children.
- III. A comparison of the total number and type of cognitive-linguistic devices used by the SLI children and the typically developing children.
- IV. Quantitative and qualitative differences between the SLI children and typically developing children's use of specific cognitive-linguistic devices.

2.1. The mean number of devices used by individual SLI children in comparison with individual typically developing children.

The following tables (2.1.1. – 2.1.3) show the type and number of devices used by the individual SLI and language normal subjects. This reveals the individual variation between subjects, especially the typically developing subjects.

Table 2.1.1. Number of devices used by SLI subjects for *The Puppy Story* (all interview parts) and *The Kitten Story* (all interview parts)

E.A. = Emotional Ambivalence Level score
F.C. = Feeling Change Level score (emotional causality)

The Puppy Story

Subject	E.A.	F.C.	mrp	mime	meta.	p.exp.	f.psych.
JD	1	2	0	2	0	0	0
AB	1	1	0	0	0	0	1
GG	1	2	0	0	2	0	0
ER	2	1	1	3	1	0	0

The Kitten Story

Subject	E.A.	F.C.	mrp	mime	meta.	p.exp.	f.psych.
JD	1	1	0	2	3	0	0
AB	1	1	0	1	0	0	0
GG	2	1	0	0	1	0	0
ER	1	1	0	0	2	0	0

Table 2.1.2. Number of devices used by language normal children aged 7 – 8 years for *The Puppy Story* (all interview parts)

E.A. = Emotional Ambivalence Level score
F.C. = Feeling Change Level score (emotional causality)

7 – 8 yrs group

Male

Subject	E.A.	F.C.	mrp	mime	meta.	p.exp.	f.psych.
DC	2	2	2	1	8	2	0
AA	3	2	5	0	4	0	0
JF	1	1	0	0	3	0	0
JH	2	2	3	3	1	3	0
CH	1	1	0	0	3	0	0
CS	1	1	0	0	0	0	0
AMcM	3	1	0	1	1	0	1
KC	3	2	11	14	4	2	2

Female

Subject	E.A.	F.C.	mrp	mime	meta.	p.exp.	f.psych.
HD	1	1	0	1	10	0	0
JM	3	2	15	0	6	4	7
JOR	2	2	5	0	1	0	0
AP	2	1	1	0	2	0	1
AB	2	2	3	0	4	0	0
JH	1	1	0	0	0	0	0
RJ	1	1	0	0	0	0	0
AH	1	2	2	1	1	0	0

Table 2.1.3. Number of devices used by language normal children aged 10 – 11years for *The Puppy Story* (all interview parts)

E.A. = Emotional Ambivalence Level score
F.C. = Feeling Change Level score (emotional causality)

10 – 11 yrs group

Male

Subject	E.A.	F.C.	mrp	mime	meta.	p.exp.	f.psych.
LD	3	3	0	0	1	4	0
MT	3	3	0	0	2	1	0
BD	3	3	1	0	1	1	2
AB	3	2	12	0	2	7	1
DD	2	2	1	0	0	0	1
EMcL	3	3	14	5	5	4	2
HBS	3	3	1	0	1	0	0
OP	3	3	0	1	1	0	1

Female

Subject	E.A.	F.C.	mrp	mime	meta.	p.exp.	f.psych.
LH	3	2	1	0	0	0	1
KM	3	3	0	0	2	1	0
LP	2	2	0	0	3	0	0
AJ	3	3	2	0	0	1	1
RC	1	1	0	0	1	0	0
SSM	3	3	17	1	6	0	3
MWS	3	3	1	0	10	0	0
AH	3	2	4	0	2	6	2

The following tables show the total number of devices used by each subject (SLI and language normal children). The mean number of devices used by each group was then calculated. The mean figure was calculated to the nearest whole number. The range, which shows over how many numbers altogether the distribution of scores is spread, is also given. However, when considering the mean and the range the extreme variation in the number of devices obtained by individual typically developing children should be remembered.

Table 2.1.4. Total number of devices used per SLI subject for *The Puppy Story* (all interview parts) and *The Kitten Story* (all interview parts)

The Puppy Story

Subject	No. of devices
JD	2
AB	1
GG	2
ER	5
Total	10
Mean = 3	
Range = 4	

The Kitten Story

Subject	No. of devices
JD	5
AB	1
GG	1
ER	2
Total	9
Mean = 2	
Range = 4	

For these SLI subjects the variation in the number of devices used when compared to the typically developing children (see below) is small (1-5). It is also the same for both stories. However, although the variation is relatively small only one subject scored at the highest number (5) for each story with the other three subjects all scoring between 1 and 2.

The mean number of devices used is similar for both *The Puppy Story* (3) and *the Kitten Story* (2) and the range is identical for both stories.

Table 2.1.5. total number of devices used per language normal subject aged 7 – 8 years for *The Puppy Story* (all interview parts)

7 – 8 yrs group

<u>Male</u>		<u>Female</u>	
Subject	No. of devices	Subject	No. of devices
DC	13	HD	11
AA	9	JM	32
JF	3	JOR	6
JH	10	AP	4
CH	3	AB	7
CS	0	JH	0
AMcM	3	RJ	0
KC	33	AH	4
Total	74	Total	64
Mean = 9	Range = 33	Mean = 8	Range = 32

Total Male + Female = 138

Mean = 9

Range = 33

Table 2.1.6. Total number of devices used per language normal subject aged 10 – 11 years for *The Puppy Story* (all interview parts)

10 – 11 yrs group

Male

Subject	No. of devices
LD	5
MT	3
BD	5
AB	22
DD	2
EMcL	30
HBS	2
OP	3
Total	72
Mean = 9	
Range = 28	

Female

Subject	No. of devices
LH	2
KM	3
LP	3
AJ	4
RC	1
SSM	27
MWS	11
AH	14
Total	65
Mean = 8	
Range = 26	

Total Male + Female = 137
Mean = 9
Range = 29

For typically developing children the variation in the number of devices used is large. However, this variation is very similar across both ages and for both sexes:

7 – 8 year old Males

Numbers vary from 0 – 33
devices used per subject

7 – 8 year old Females

Numbers vary from 0 – 32
devices used per subject

10 -11 year old Males

Numbers vary from 2 – 30
devices used per subject

10 – 11 year old Females

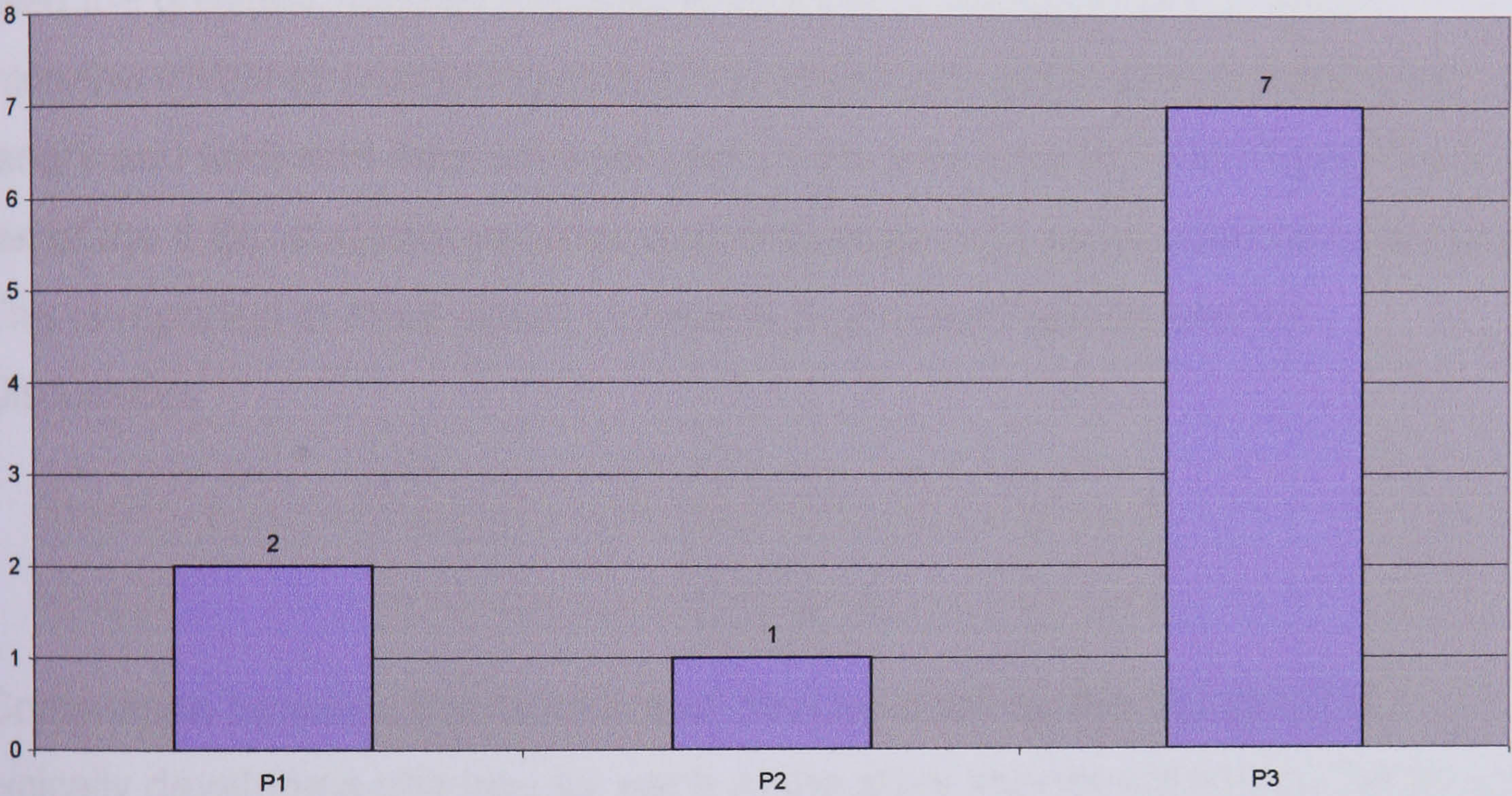
Numbers vary from 1 – 27
devices used per subject

The mean number of cognitive-linguistic devices used by SLI children was lower than for typically developing from either age group: 3 vs.9 (7 – 8 year olds), 9 (10 – 11 years olds).

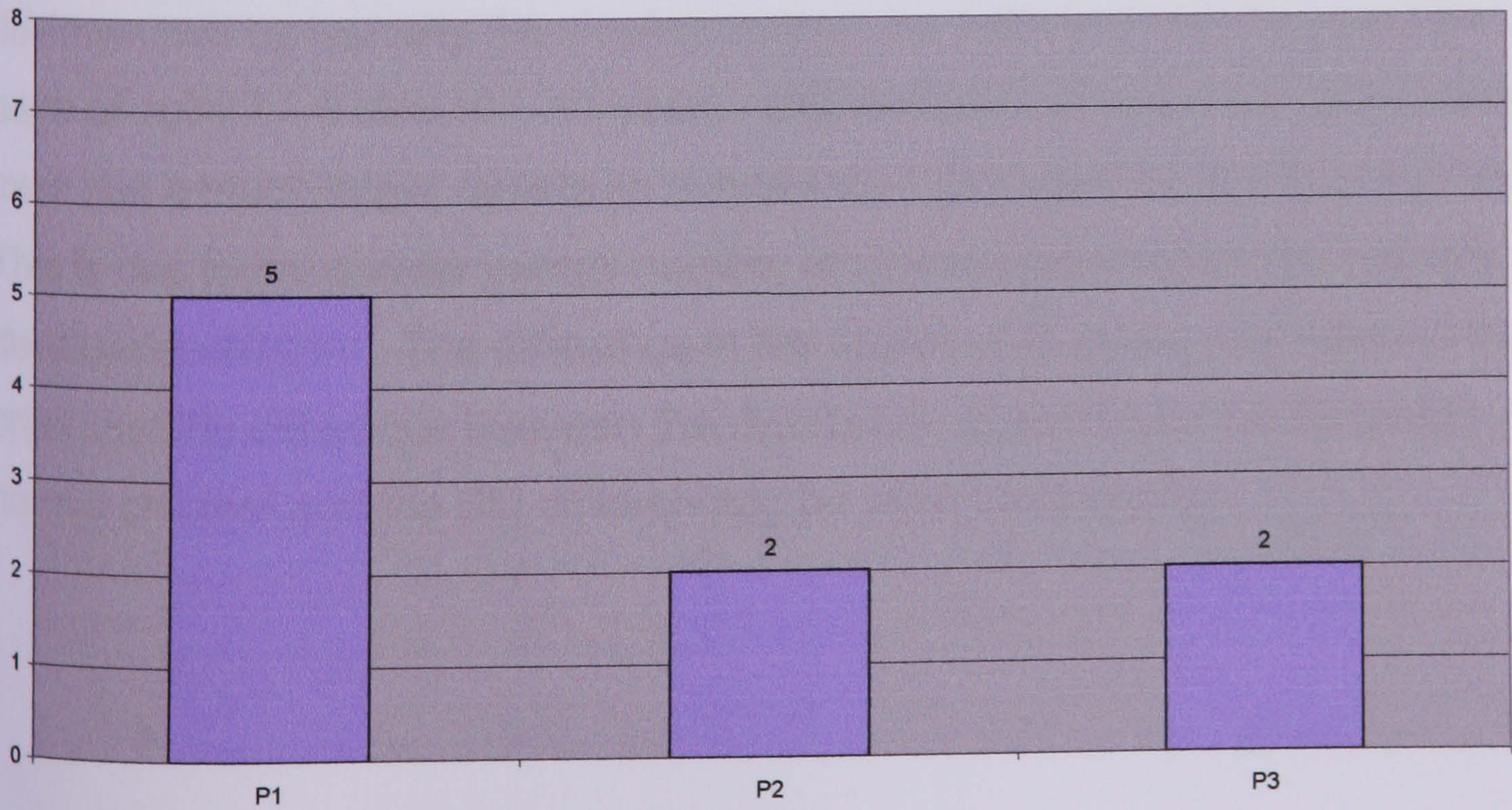
2.II. A comparison of the total number of cognitive-linguistic devices used per story interview part by the SLI children and the typically developing children.

Bar Charts 2.II.1. and 2.II.2. show the total number of devices used by the SLI children for each story interview part for *The Puppy Story* and *The Kitten Story*.

Bar Chart 2.II.1.
Number of devices used by SLI children per story part (*The Puppy Story*)



Bar Chart 2.II.2.
Number of devices used by the SLI children per story part (*The Kitten Story*)



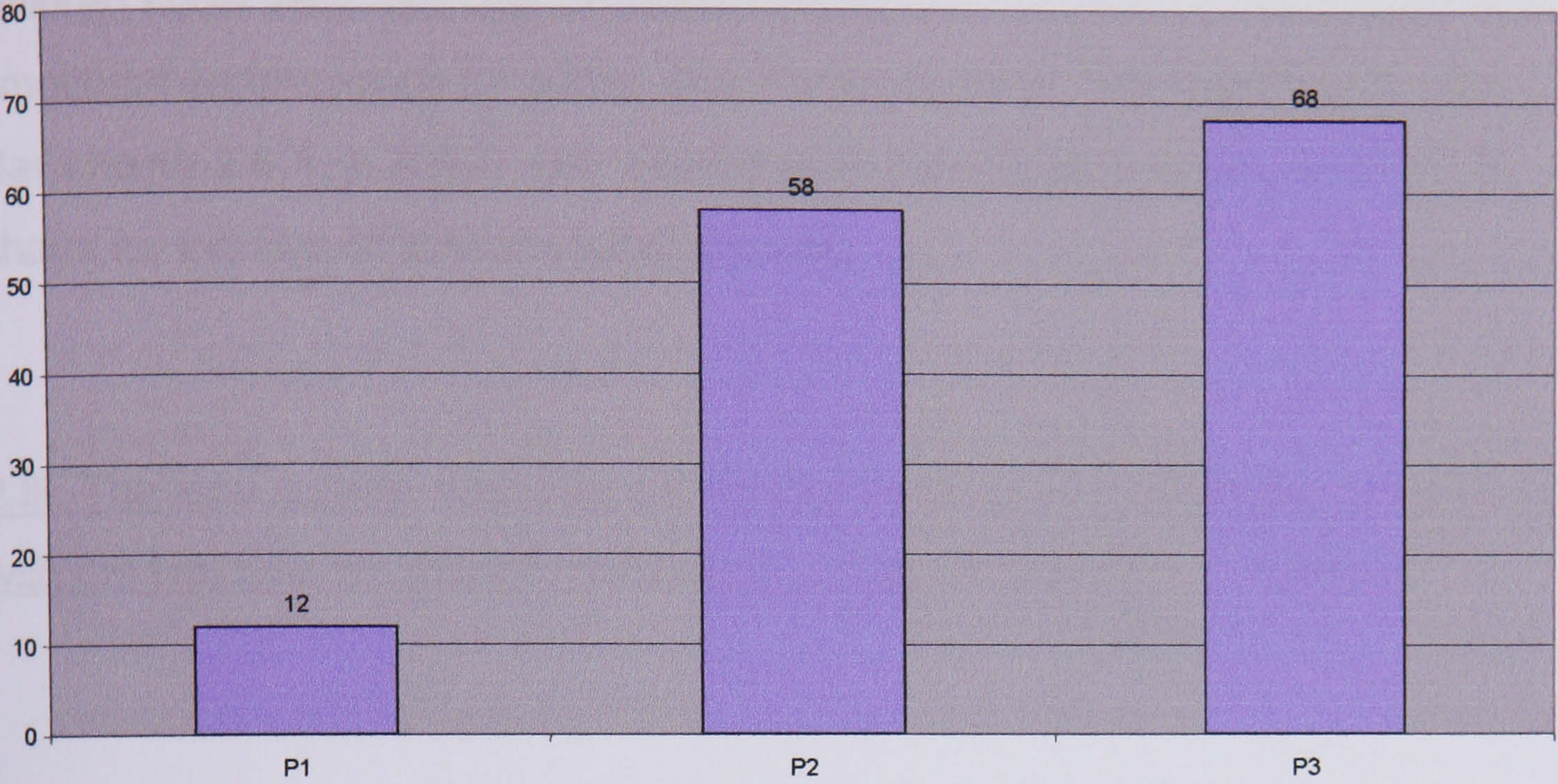
From **Bar Chart 2.II.1.** it can be seen that the SLI children used the greatest number of cognitive-linguistic devices when answering questions to Part 3 of *The Puppy Story* interview. This related to understanding what causes emotions to change. The least number of devices were used when answering questions relating to ambivalent emotions (Part 2).

This is different to the distribution of scores found for *The Kitten Story* (**Bar Chart 2.II.2.**) and suggests that the two stories place different demands on the children's cognitive-linguistic skills. For *The Kitten Story* the SLI children used the greatest number of devices for Part 1. This part of the story interview involved answering questions relating to same valence emotions (angry and sad) and had not been part of the protocols for *The Puppy Story*. 3 out of the 4 SLI subjects experienced difficulties with same valence emotions. This is reported in more detail in section 3 of these Results and the Discussion.

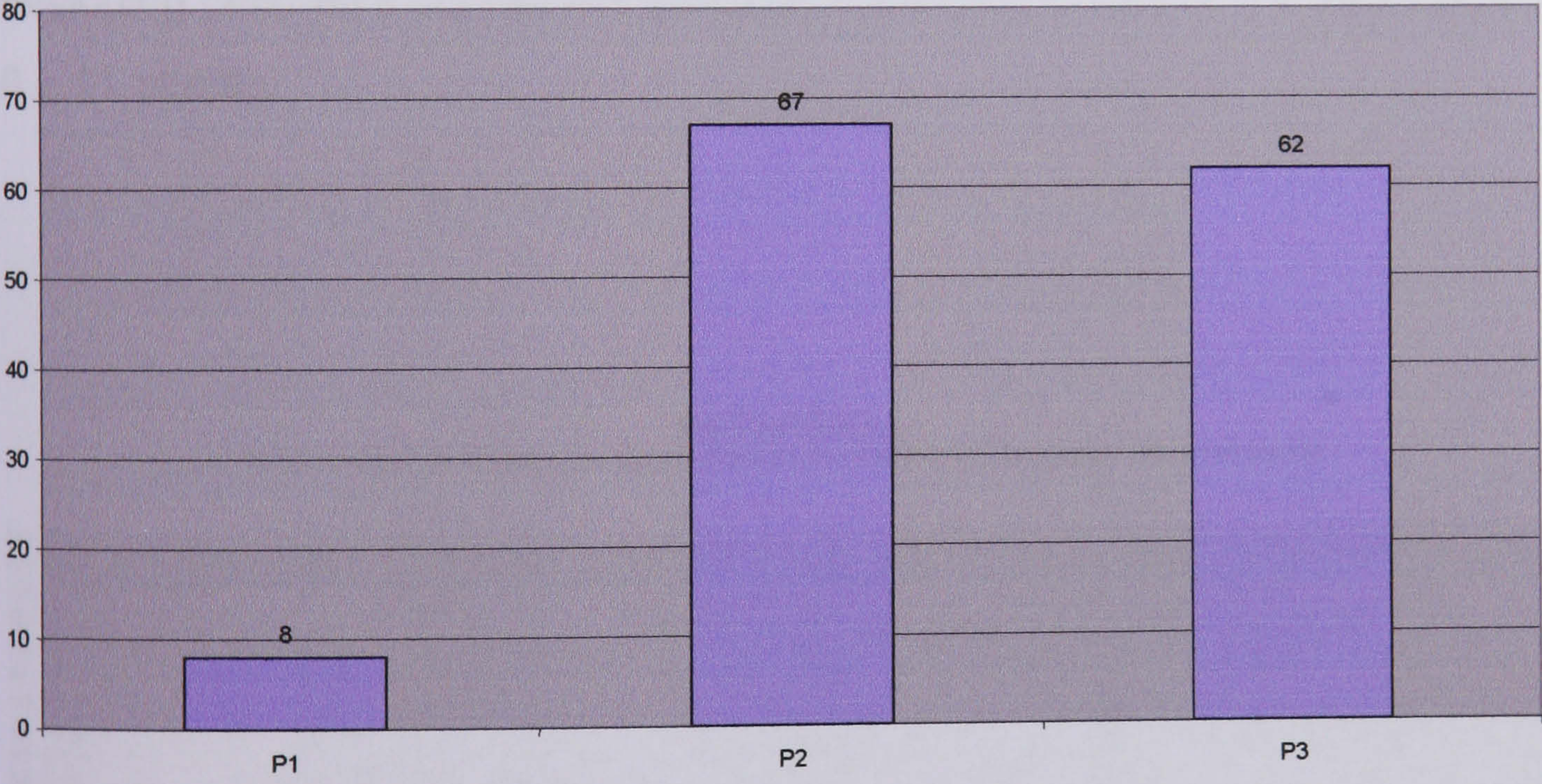
Comparison between the numbers of devices used by the SLI and the typically developing children for each of the story interview parts in *The Puppy Story* also show differences.

Bar Charts 2.II.3. and **2.II.4.** (below) show the number of cognitive-linguistic devices used by typically developing children for each of the three interview parts at ages 7 – 8 and 10 – 11 years. (**NB** it should be noted that the vertical axes has a much larger maximum number than that used for the SLI children. This is due to the greater overall number of devices recorded by the typically developing children. The difference in the scales of the axes was retained in order that the difference between the distribution of scores for the language normal children and the SLI children can be seen more easily)

Bar Chart 2.II.3.
Number of devices used by Language Normal children at age 7 - 8 years per story part (*The Puppy Story*)



Bar Chart 2.II.4.
Number of devices used by Language Normal children at age 10 - 11 years per story part (*The Puppy Story*)



Typically developing children of both ages use the greatest number of cognitive and linguistic devices for Parts 2 and 3 of *The Puppy Story* interview. These parts have more questions than Part 1 and contain the most emotionally complex information (Part 2 emotional ambivalence, Part 3 emotional causality).

SLI children show a very different distribution of devices than these typically developing children. In comparison with the language normal children the SLI children show very little use of cognitive-linguistic devices in Part 2 relating to emotional ambivalence for either *The Puppy Story* or *The Kitten Story* (see **Bar charts 2.II.1. & 2.II.2.** NB. Please note the different scales used in the charts for the two different subject groups).

2.III. The total number and type of devices used by SLI children in comparison with the typically developing children (7 – 8 years and 10 – 11 years).

Bar charts 2.III.1. – 2.III.3. show the type and total number of cognitive-linguistic devices used by the SLI children and the typically developing children when answering questions relating to *The Puppy Story*. The typically developing children’s scores are grouped according to age (7 – 8 years and 10 – 11 years).

Bar Chart 2.III.1.
Total number of devices per type used by SLI children in *The Puppy Story* (all parts)

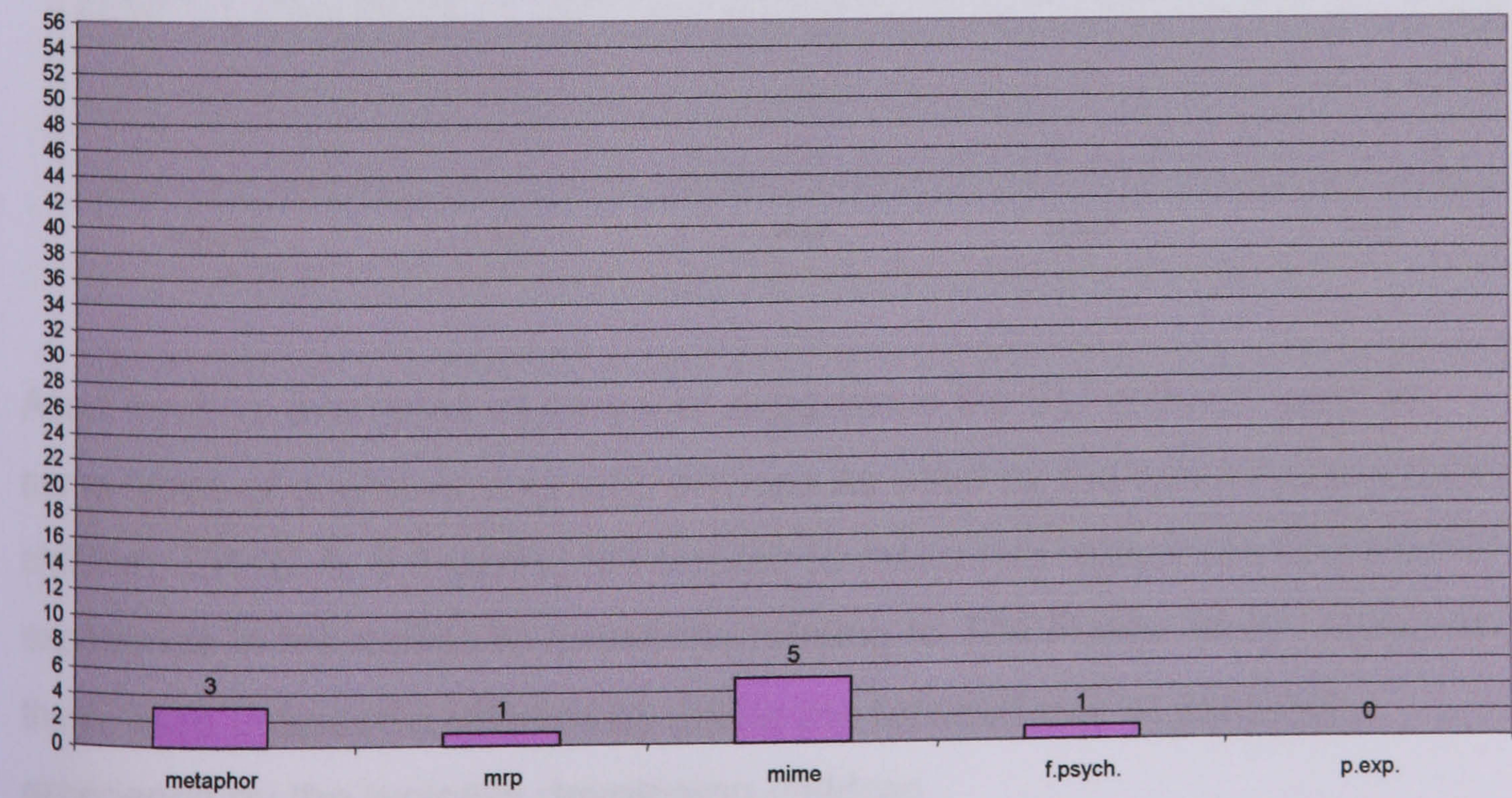
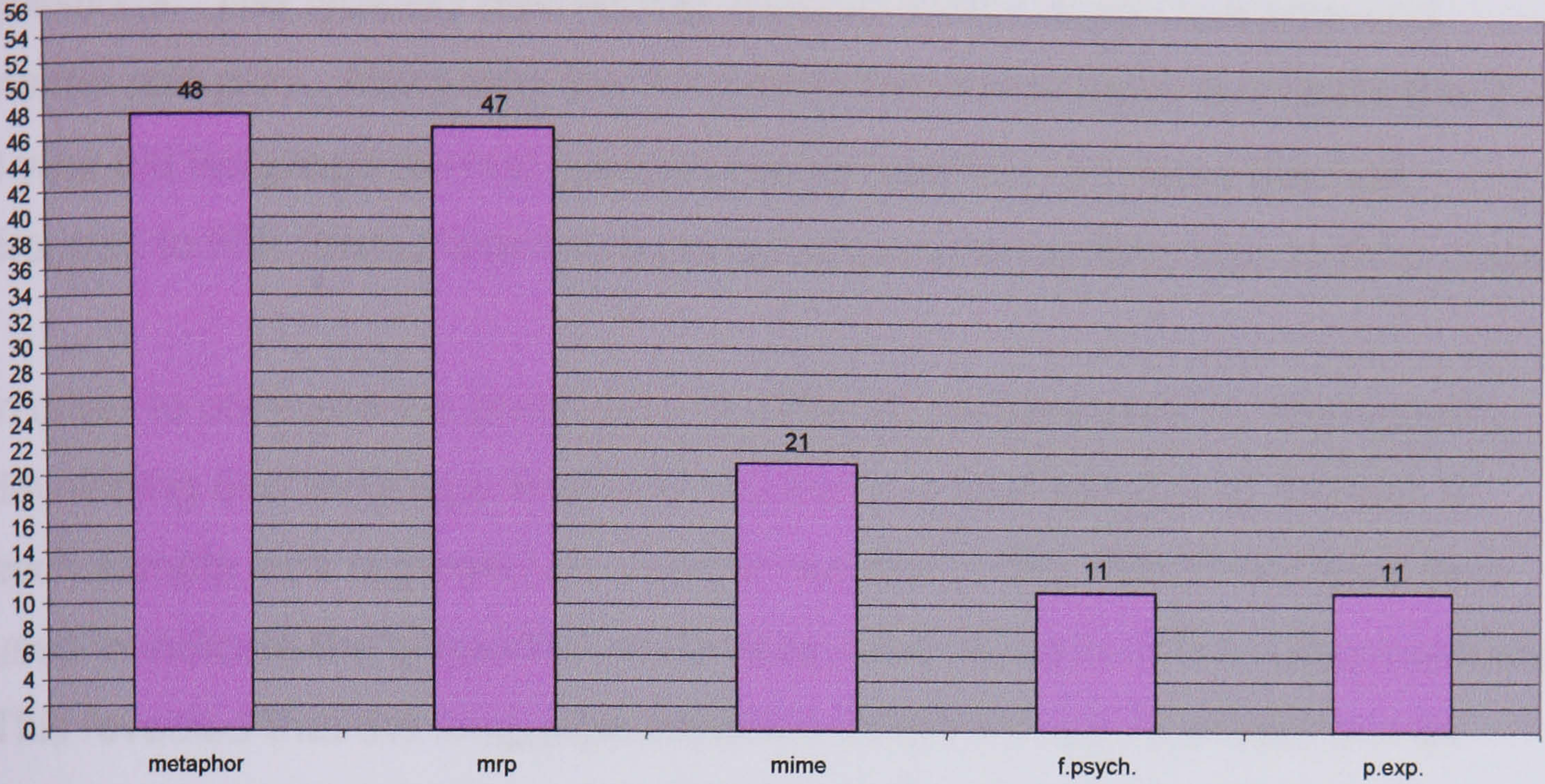
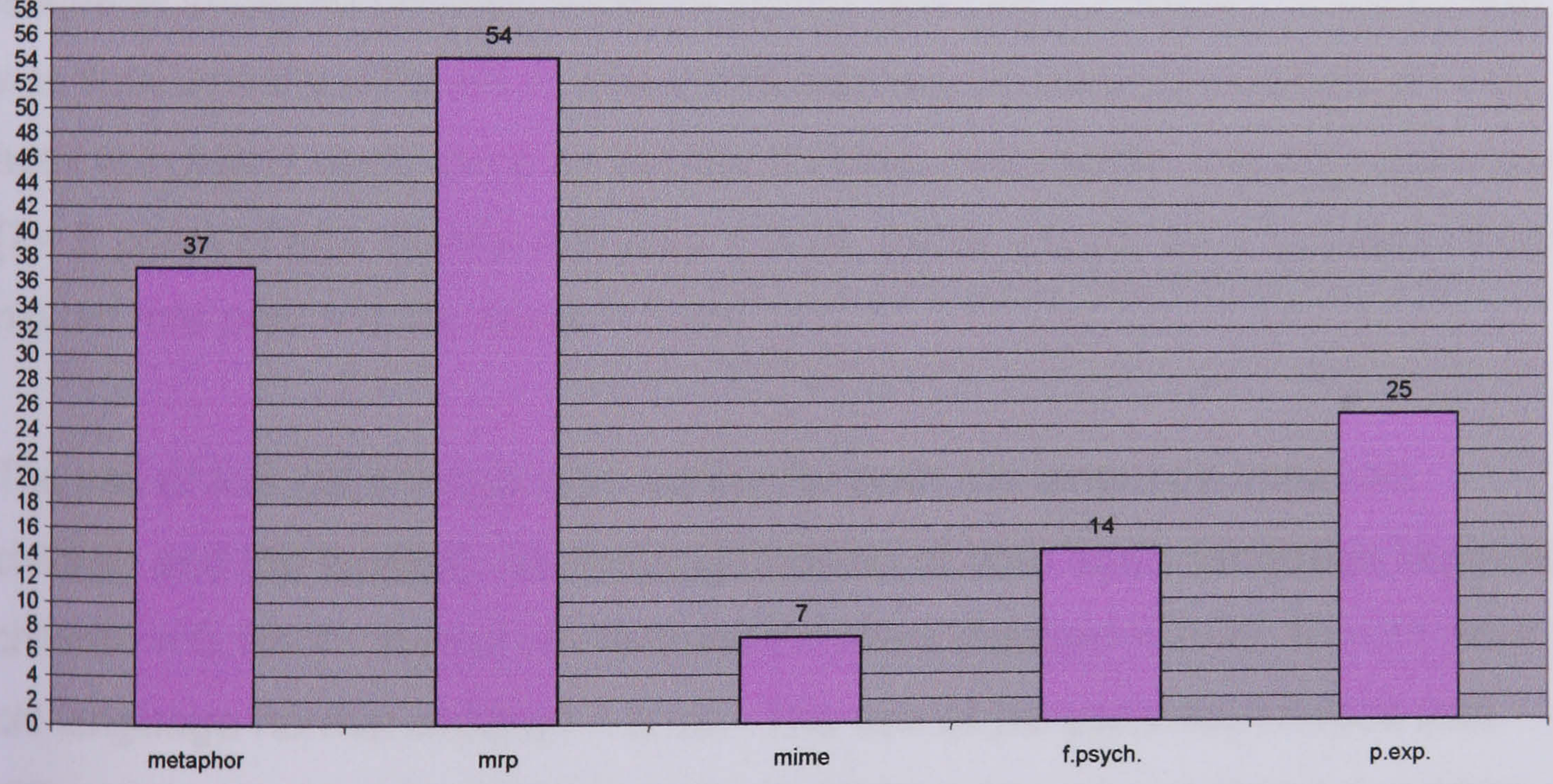


Table 2.III.1. mrp = *mental role play*, f.psych. = *folk psychology*, p.exp. = *personal experience*.

Bar Chart 2.III.2.
Total number of devices per type used by Language Normal children in *The Puppy Story* (all parts) at age 7 - 8 years



Bar Chart 2.III.3.
Total number of devices per type used by Language Normal children in *The Puppy Story* (all parts) at age 10 -11 years



Apart from no examples of *personal experience* the SLI children used the same types of cognitive-linguistic devices as used by the typically developing children. ER (C.A. 9.3 years) did appear to make two references to personal experience in his replies to questions relating to *The Puppy Story*. However, these were unspecific references unlike the focused use of personal experience by the typically developing children.

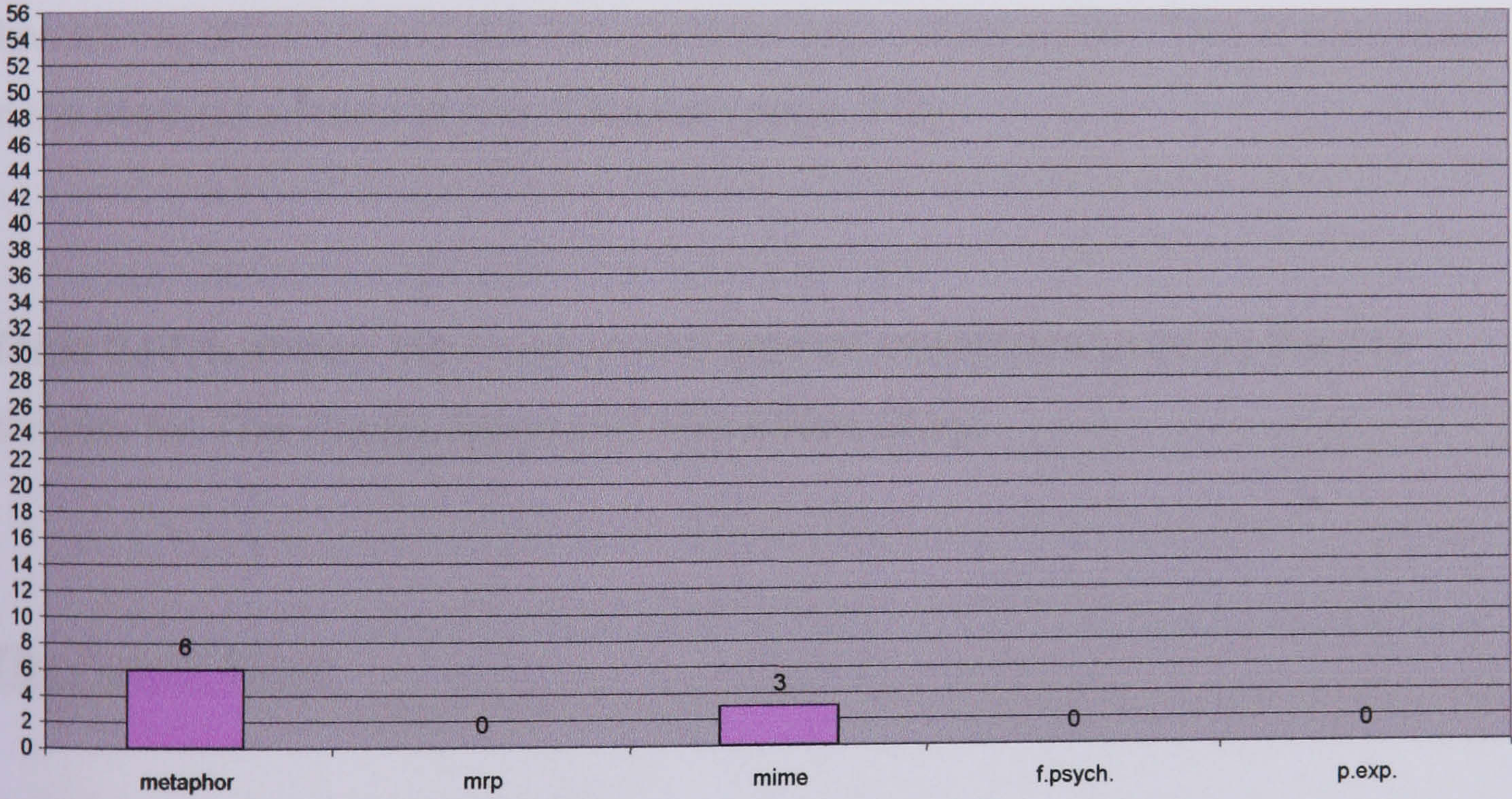
Unlike the typically developing children of both ages, the SLI children (C.A.'s 13.2, 11.9, 9.10, 9.3) used mostly *mime* in their responses to interview questions. The typically developing children used mainly *metaphor* and *mental role play*. *Mime* was the third most commonly used device for the 7 – 8 year old language normal children but by age 10 – 11 years this had dropped to fifth (last) place while *personal experience* had risen to third place.

In order to compare the proportion of different devices used by the typically developing and language impaired children the total number of devices in each sample was regarded as a whole number (1.00). Decimals were then used to indicate the proportion of devices used by each of the subject groups. This revealed that the language impaired children's use of *metaphor* was similar to that of the typically developing children of both ages: language impaired children = 0.30; 7 – 8 year old typically developing children = 0.34 and 10 – 11 year old typically developing children = 0.27. However, the language impaired children's use of *mental role play* (0.10) and *mime* (0.50) was substantially different to that of the typically developing children of both ages with *mime* used more by the SLI children and *mental role play* used less. (7 – 8 years of age *mental role play* = 0.34, *mime* = 0.15; 10 – 11 years of age *mental role play* = 0.40, *mime* = 0.05)

The use of *folk psychology* was similar for both the language impaired children and the typically developing children of both ages: language impaired children = 0.10; 7 - 8 year old language normal children = 0.08; 10 – 11 year old language normal children = 0.10. The use of *personal experience* was different for each of the three groups of children: language impaired children = no examples (0.0); 7 – 8 year old language normal children = 0.08; 10 – 11 year old language normal children = 0.18. This suggests that the use of *personal experience* is a feature of older/more emotionally mature children and why, given their immaturity, it was not present in the SLI children's data.

Bar chart 2.III.4. (below) relates to the cognitive-linguistic devices used by the SLI subjects for *The Kitten Story*. This shows a restricted use of the devices by the SLI children when compared to those used for *The Puppy Story* (only *metaphor* and *mime* are used). See **Bar chart 2.III.1.** page 410 for comparison. This may be linked to differences between the two stories as explored in Chapter 3. *Metaphor* is used more than *mime* and the use of *metaphor* is greater in *The Kitten Story* than *The Puppy Story*. Differences between the SLI children’s performance for the two stories, and the possible role played by the picture supports is explored in greater detail in the Discussion.

Bar Chart 2.III.4.
Total number of devices per type used by SLI children in *The Kitten Story* (all parts)



2.IV. Quantitative and qualitative differences between the SLI children and typically developing children's use of specific cognitive and linguistic devices.

For this level of analysis the five cognitive-linguistic devices (*metaphor, mental role play, mime, personal experience and folk psychology*) were looked at individually. Similarities and differences in their use by SLI children and typically developing children were then noted.

Metaphor

The type of language and imagery used in *metaphors* by the typically developing children and the SLI children was categorised. This is described in the Method section of this Chapter (page 373).

Table 2.IV.1. shows the number and type of metaphors used by the SLI children for *The Puppy Story* and *The Kitten Story*.

The Puppy Story

Subject	Type of metaphor		
	Spatial	Transformation	External Characteristics
JD	0	0	0
AB	0	0	0
GG	1	1	0
ER	0	0	1

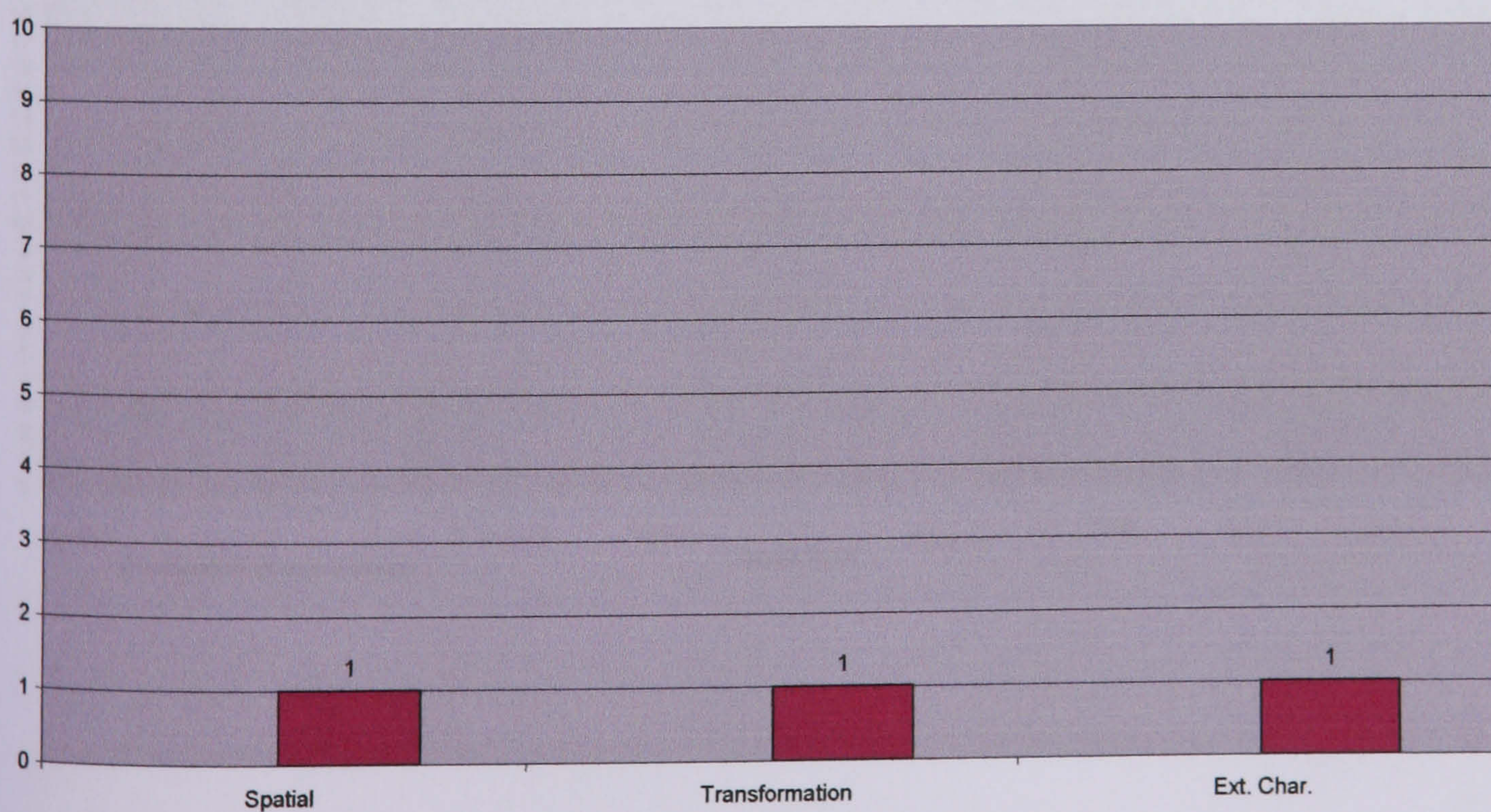
The Kitten Story

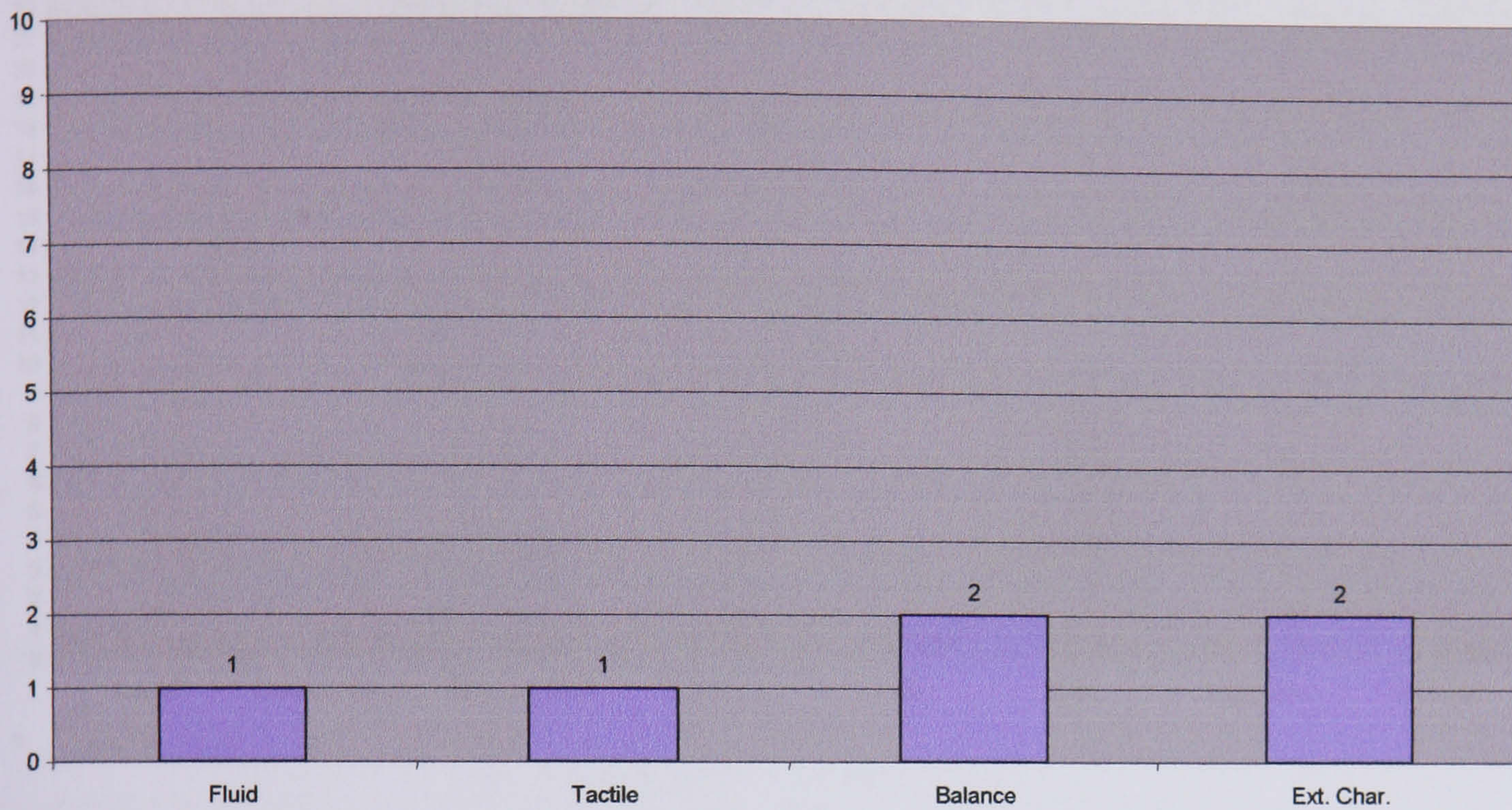
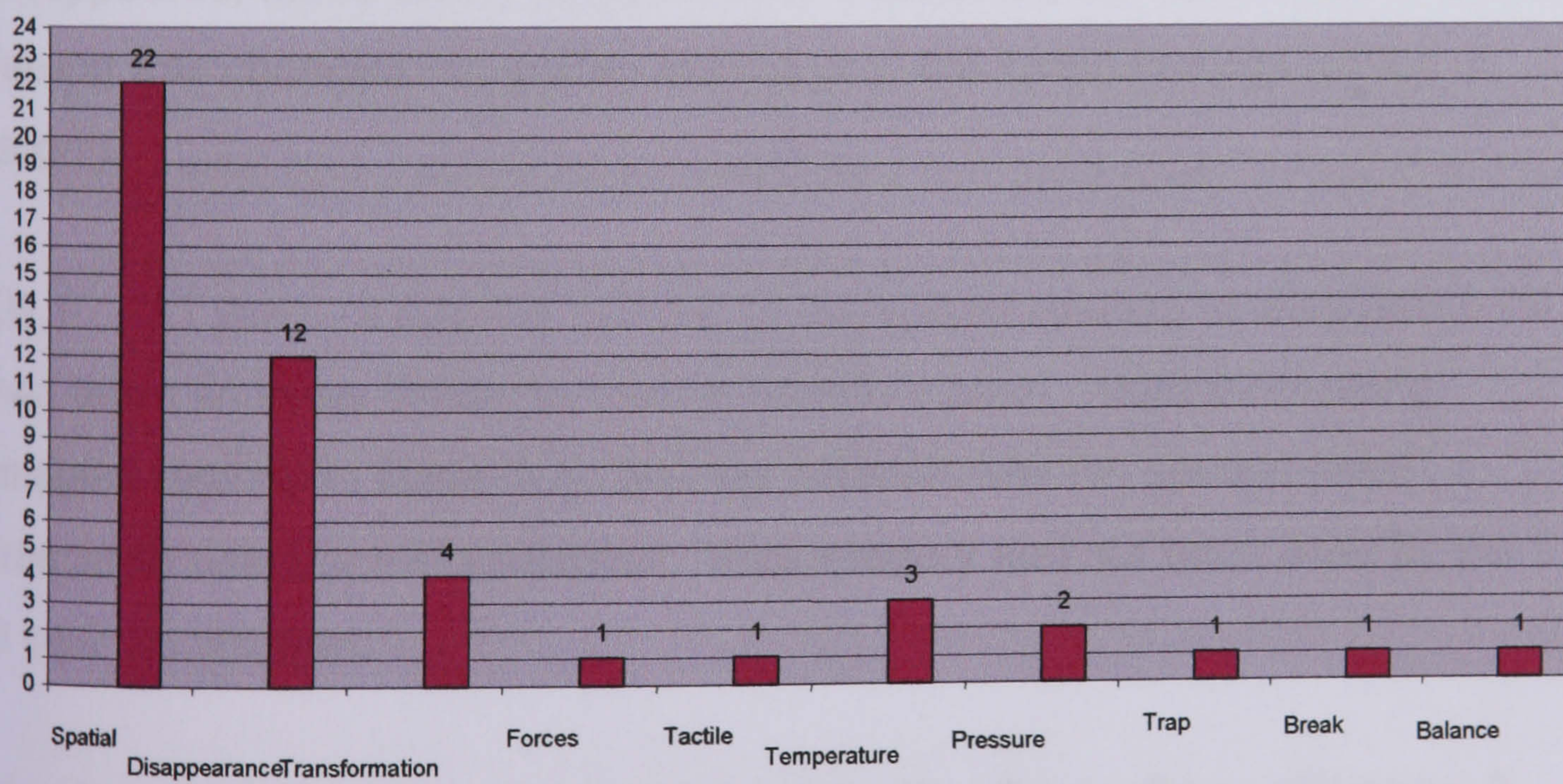
Subject	Type of metaphor			
	Fluid	Tactile	Balance	External Characteristics
JD	1	1	1	0
AB	0	0	0	0
GG	0	0	1	0
ER	0	0	0	2

For *The Puppy Story* a total of 3 metaphors were used by 2 of the subjects (GG and ER). For *The Kitten Story* a total of 6 metaphors were used by 3 of the subjects (GG, ER and JD). AB was the only SLI subject to use no metaphors in his answers to either *The Puppy Story* or *The Kitten Story*. This information was then converted into a bar chart for comparison with typically developing children. (N.B. the vertical axes for the SLI children and the language normal children have different scales).

Bar Chart 2.IV.1.

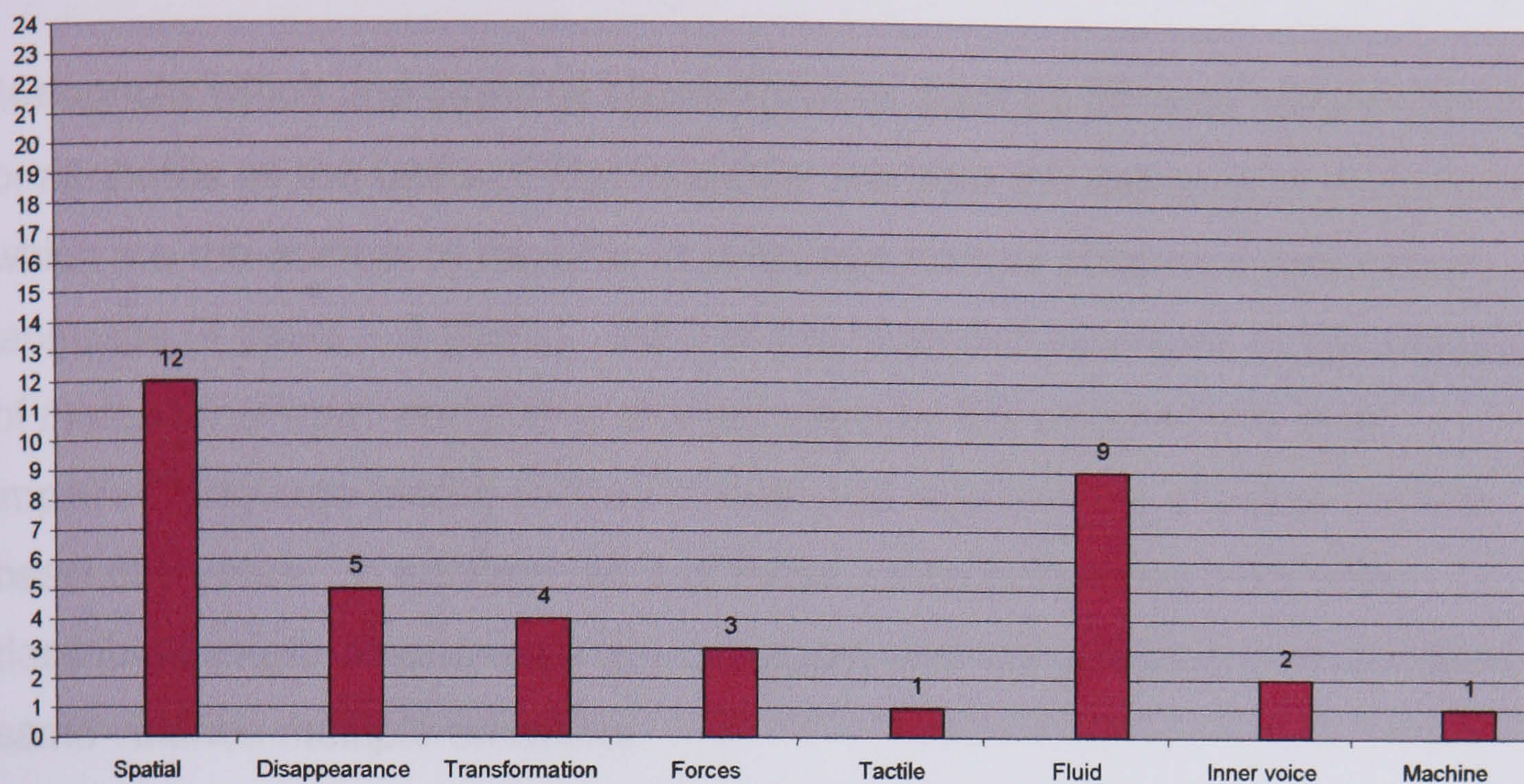
Total number of metaphors per type used by SLI children in *The Puppy Story* (all parts)



Bar Chart 2.IV.2.Total number of metaphors per type used by SLI children in *The Kitten Story* (all parts)**Bar Chart 2.IV.3.**Total number of metaphors per type used by Language Normal children aged 7 - 8 years in *The Puppy Story* (all parts)

Bar Chart 2.IV.4.

Total number of metaphors per type used by Language Normal children aged 10 - 11 years in *The Puppy Story* (all parts)



Typically developing children in both age groups used mainly spatial imagery in their *metaphors*. An example of this would be the child who described Mike as *loving on the inside and angry on the outside* or *one side of his heart was loving and the other side was angry*. For children aged 7 – 8 years the next type of imagery used most frequently was that of disappearance (feelings *disappeared, faded away, vanished* etc) followed by transformation where a feeling was changed into another feeling (e.g. the loving feelings *turned to angry*).

By 10 – 11 years of age the number of *metaphors* relating to disappearance had fallen and was similar to that for transformation. *Metaphors* using imagery relating to fluids (e.g. feelings *simmer*) was the second most frequently used type of *metaphor*. This imagery had not been used by the 7 – 8 year old children.

The SLI children used only 3 *metaphors* for *The Puppy Story*. Of these, 2 were of a type used by the typically developing children (spatial and transformation). The third *metaphor* used external characteristics as the basis for the imagery (Mike was *angry like a giant*, Bill was *angry like a lion*). None

of the 32 language normal children (both age groups) had used this type of *metaphor*.

Metaphors which use external characteristics such as physical resemblance or attributes as the basis of their imagery are from the category of metaphors which are the earliest to develop in language normal children's expressive language (4 years – 6 years). All 3 of the recorded examples of this category of *metaphor* (*Puppy* and *Kitten* stories) were by ER who had the most impaired language profile with an overall age equivalence of below the test basal of 6 years. In addition, all 3 of these *metaphors* were used when describing single emotions (angry or happy) and not ambivalent or complex same valence multiple emotions.

Metaphors relating to external characteristics (the only type not used by the typically developing children) were the only type of *metaphor* used by the SLI children for both *The Puppy Story* and *The Kitten Story*. All other *metaphor* types used by the SLI children (both stories) could also be found in the data from the language normal children.

Metaphors of balance were used by the SLI children to avoid the confusion of ambivalent or complex emotions. For example when feeling multiple emotions (angry and sad) Bill is described as *sort of balanced* (GG), and *in the middle* of the opposing feelings sad and happy in the sense that he feels in equilibrium between the two feeling states and OK (JD). This type of *metaphor* was used once by one of the 7 – 8 year old language normal boys to describe how Mike looked when he was angry at Pepper (his face was *in the middle*, a half way state between angry and loving).

One of the SLI subjects (JD) used imagery classed under "fluid" to describe Bill's multiple feelings (angry and sad) in Part 1 of *The Kitten Story* (*he could still have mixed feeling*). Such *metaphors* were used only by the older (10 – 11 year old) typically developing children. However, the word used by JD in this particular *metaphor* (*mixed*) was a direct copy of the language used in the interview to ask about ambivalent feelings in *The Puppy Story* (will the

feelings stay *separate* or *mix together*) as well as in the test items for the concepts *separate* or *mix together*. It is therefore questionable as to whether the *metaphor* used by JD was entirely his own creative use of language or represented a remembered phrase (albeit applied appropriately). There were no examples of the direct copying of the interview language in the typically developing children's data.

A further level of analysis was used to explore the proportions of different types of *metaphors* used by the SLI children. The total number (*Puppy* and *Kitten* stories) of *metaphor* types were added together and represented as a whole number (1.0). The greatest proportion (0.34) of *metaphor* types related to external characteristics which was not represented at all in the language normal data. Both *The Puppy Story* and *The Kitten Story* had been represented by the American authors as investigating the same tasks: the understanding of ambivalent emotions and emotional causality. (These "external characteristic" *metaphors* also related to single emotion states only).

The second greatest proportion (0.22) of *metaphor* types related to balance and was used by the language impaired children to avoid the confusion of ambivalent or complex emotion. Only one example of this type of *metaphor* had been found in the typically developing children's data. Thus more than half (0.56) of the *metaphors* used by the language impaired subjects either related to single, non complex emotions or were used to avoid emotional complexity.

For typically developing children the greatest proportion of *metaphor* types related to spatial imagery: 0.47 at age 7 – 8 years and 0.32 at age 10 – 11 years. (At 10 – 11 years of age fluid type *metaphors* accounted for the second most frequently used metaphor: 0.24). Of this type of spatial *metaphor* only one (1 out of a total of 34 spatial *metaphors*) was used by typically developing children aged 7 – 11 years to describe a single emotion (love). This was by an 8 year old girl (JM). The other 33 *metaphors* were used specifically to describe complex contradictory emotions.

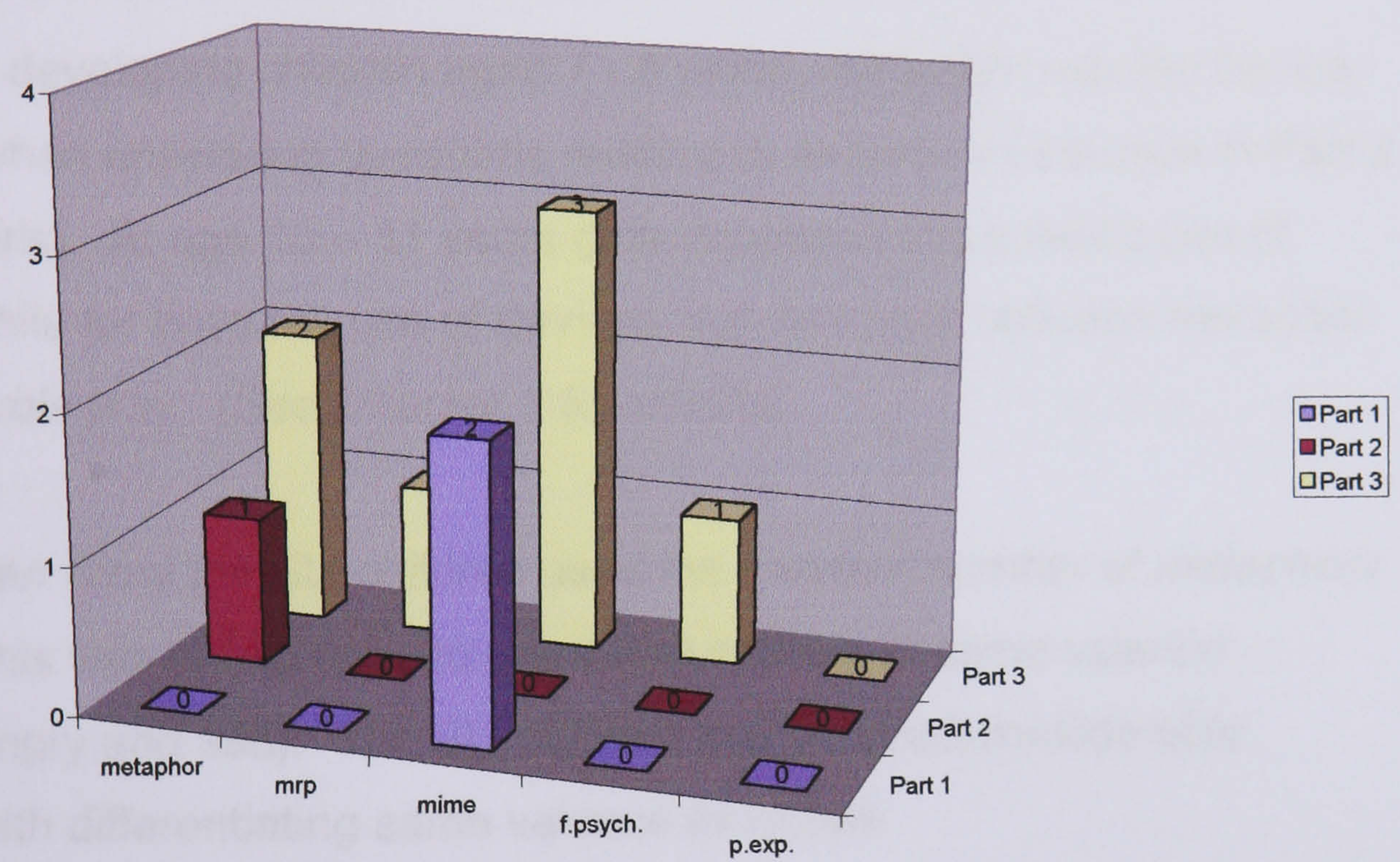
(It is acknowledged that the language normal data relates only to *The Puppy Story*. Further investigation is needed with data obtained from *The Kitten Story* by typically developing children).

The loving feelings? Q3: What was the puppy's feeling?

The final level of analysis looked at where (which story interview part) the SLI children used *metaphors* relative to other cognitive-linguistic devices (**Bar Charts 2.IV.5. and 2.IV.6.below**):

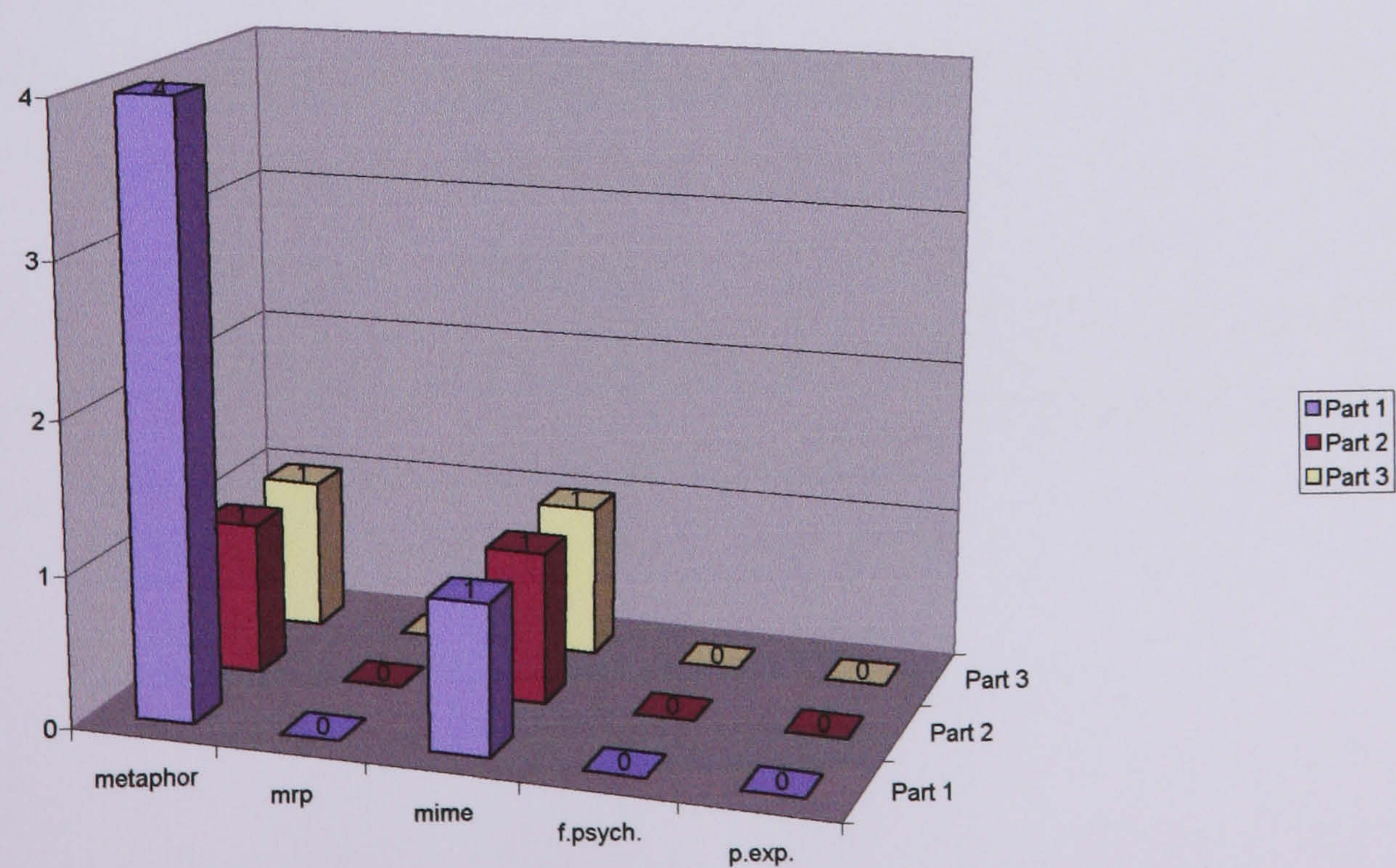
Bar Chart 2.IV.5.

Total number and type of devices used by SLI children per story part (*The Puppy Story*)



Bar Chart 2.IV.6.

Total number and type of devices used by SLI children per story part (*The Kitten Story*)



Only one subject (GG) used *metaphor* when answering questions relating to ambivalent emotion in Part 2 of *The Puppy Story* interview. This was a transformation type *metaphor* in answer to the question: *What happened to the loving feelings?* GG: ..Um..*they got turned around.*

One SLI subject (JD) used *metaphor* in Part 2 of *The Kitten Story* interview. This was a balance type of *metaphor* avoiding or “neutralising” the confusion caused by contradictory emotion (Bill was *in the middle* of feelings for the two cats and felt OK).

For typically developing children aged 7 - 8 years, *metaphor* was the device used most when answering questions relating to ambivalent emotion in Part 2 (boys and girls). At age 10 – 11 years girls increased this specific use of *metaphor* while for boys the use of devices was now split between *metaphor* and *mental role play*. (See Chapter 3 for details).

For *The Kitten Story* the SLI children used the greatest number of *metaphors* in Part 1. This was in response to questions relating to same valence emotions (angry and sad). The SLI children experienced considerable difficulties with differentiating same valence emotions.

Mime

A total of 3 out of the 4 SLI children used *mime* in their responses. This represents a higher incidence than that found for typically developing children. At age 7 – 8 years, 4 out of 8 boys and 2 out of 8 girls used *mime*. By age 10 - 11 years this had dropped to 2 out of 8 boys and 1 out of 8 girls.

The type of the *mime* used by the typically developing children and the SLI children was categorised. This is described in the Method section of this Chapter (page 376). Five types or categories of *mime* were identified:

Categories of mime:

Verb/gesture. This was the simplest type of mime used to illustrate a verb describing a single action.

Facial Expression. Instead of replying verbally to a question regarding the protagonist's feelings the subject mimed the required facial expression.

Emotional behaviour. This is where the subject mimed behaviour associated with a specific emotion.

Illustrates story. This is where a *mime* is used as part of a short "mini" story told by the subject to support their reply to a question.

Mental role play. This is where a *mime* was used in the context of, or as an immediate prelude to, *mental role play* where the subject responded to a question in the character of one of the story protagonists.

The following tables (Tables 2.IV.2. - 2.IV.6.) show the number of *mimes* used in each category for *The Puppy Story* by the typically developing children and the SLI children. For the typically developing children the results are given according to age group and gender:

Table 2.IV.2.

**Number and category of *mimes* used by Language Normal boys aged 7
– 8 years in *The Puppy Story***

	<u>Subject</u>			
	DC	JH	AMcM	KC
<u>Mime</u>				
Verb	0	0	1	3
Facial Expression	1	1	0	4
Emotional behaviour	0	0	0	1
Illustrates story	0	2	0	2
Mental role play	0	0	0	4

Table 2.IV.3.

Number and category of *mimes* used by Language Normal girls aged 7 – 8 years in *The Puppy Story*

<u>Mime</u>	<u>Subject</u>	
	HD	AH
Verb	0	0
Facial Expression	1	0
Emotional behaviour	0	1
Illustrates story	0	0
Mental role play	0	0

Form the above table it can be seen that *mime* was mainly used by boys: 19 vs. 2 for girls (total number = 21). However, the boy’s use of *mime* was not evenly distributed with 14 instances occurring for one boy (KC).

Table 2.IV.4.

**Number and category of *mimes* used by Language Normal boys aged 10
– 11 years in *The Puppy Story***

<u>Mime</u>	<u>Subject</u>	
	EMcL	OP
Verb	0	0
Facial Expression	4	1
Emotional behaviour	0	0
Illustrates story	0	0
Mental role play	1	0

Table 2.IV.5.

**Number and category of *mimes* used by Language Normal girls aged 10
– 11 years in *The Puppy Story***

	<u>Subject</u>
	SSM
<u>Mime</u>	
Verb	0
Facial Expression	1
Emotional behaviour	0
Illustrates story	0
Mental role play	0

As for the younger age group *mime* was mainly used by boys but this had decreased in number from the younger age group: 6 vs. 1 for the girl (total number = 7). However, like the younger boys *mime* was not evenly distributed with 5 instances occurring for just one boy (EMcL).

Table 2.IV.6.

Number and category of *mimes* used by SLI children in *The Puppy Story*

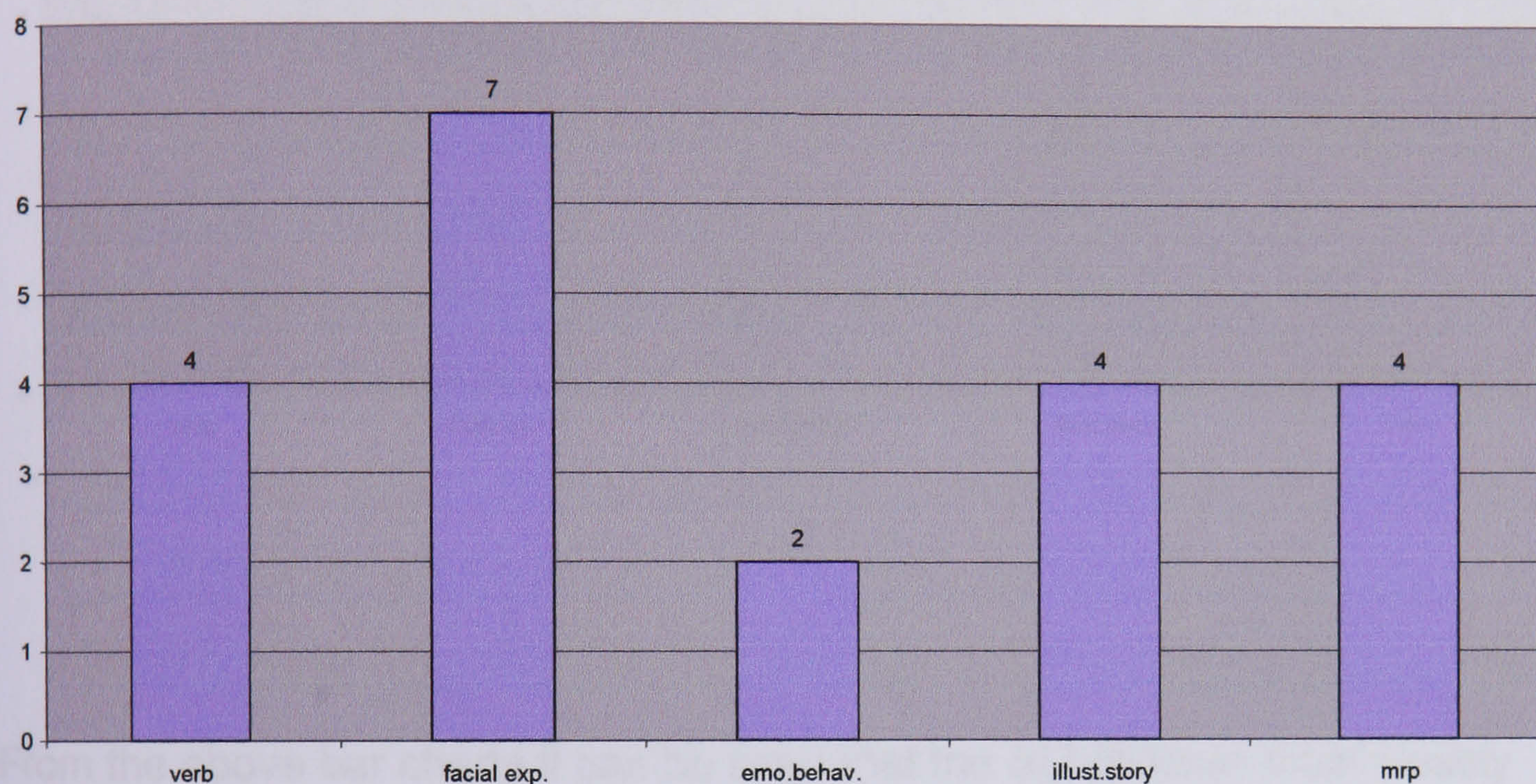
<u>Mime</u>	<u>Subject</u>	
	JD	ER
Verb	1	1
Facial Expression	1	0
Emotional behaviour	0	1
Illustrates story	0	1
Mental role play	0	0

Like the language normal subjects not all the SLI children used *mime*. AB and GG had no recorded use of *mime* for *The Puppy Story*. The SLI children used the same types of *mimes* as the language normal children apart from *mental role play* which was absent from the SLI data. A larger cohort of subjects is needed to investigate if the individual variation in numbers seen in the typically developing younger and older boys is followed by SLI children.

Bar Charts 2.IV.7. – 2.IV.9. show the total number of mimes used in each category by the typically developing children and the SLI children.

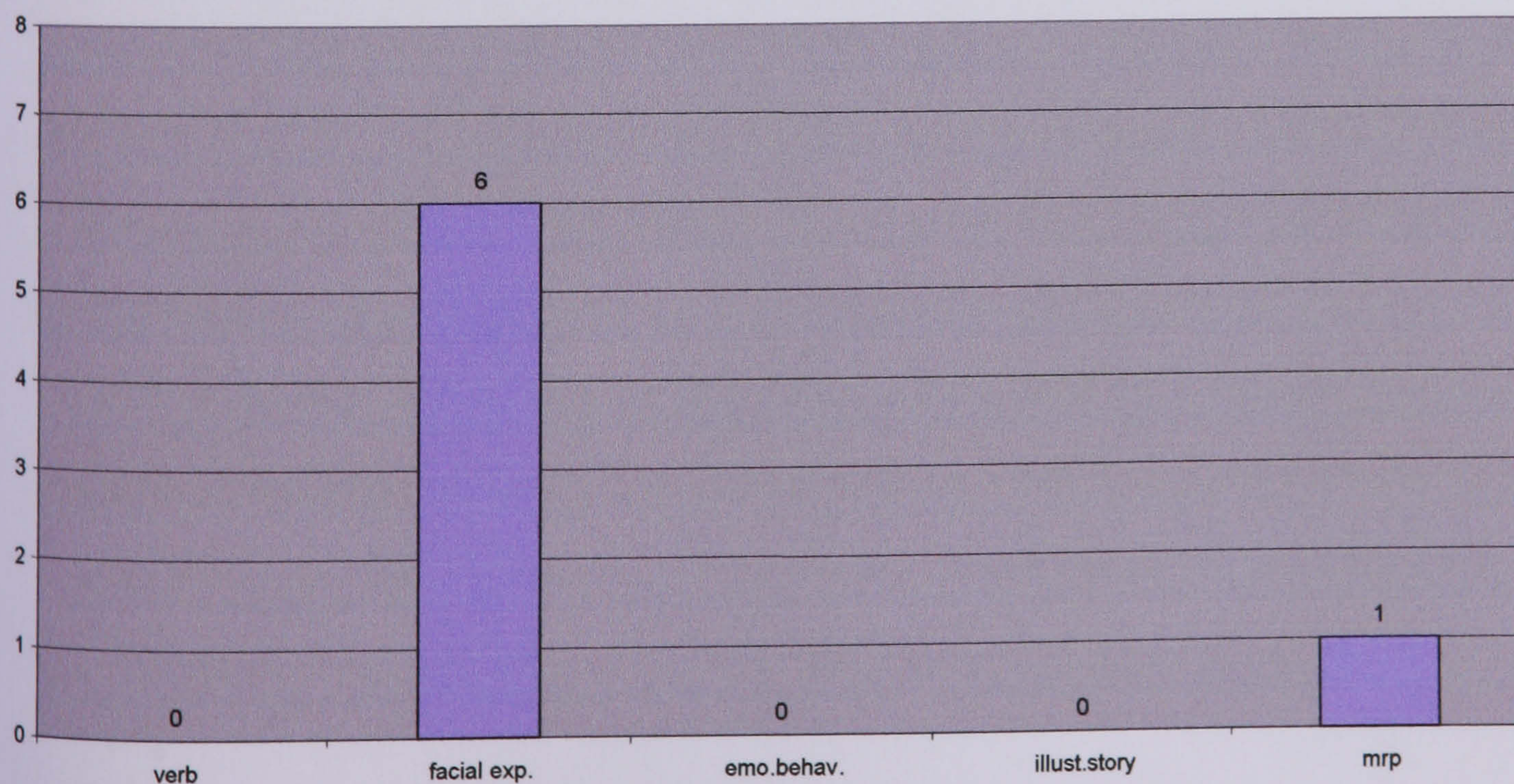
Bar Chart 2.IV.7.

Total number of *mimes* per category used by Language Normal children aged 7 - 8 years in *The Puppy Story*

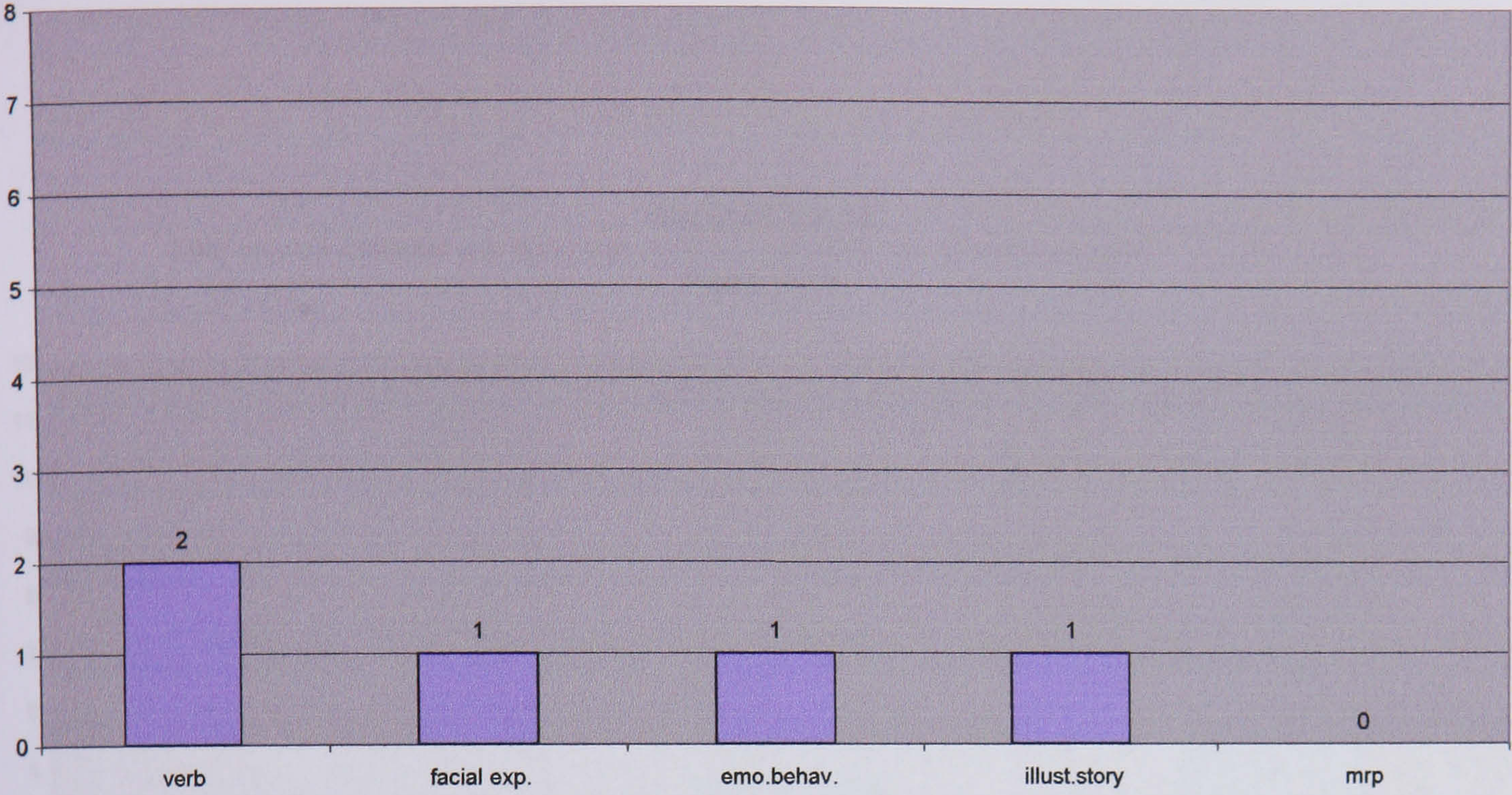


Bar Chart 2.IV.8.

Total number of *mimes* per category used by Language Normal children aged 10 - 11 years in *The Puppy Story*



Bar Chart 2.IV.9.
Total number of *mimes* per category used by SLI children in *The Puppy Story*



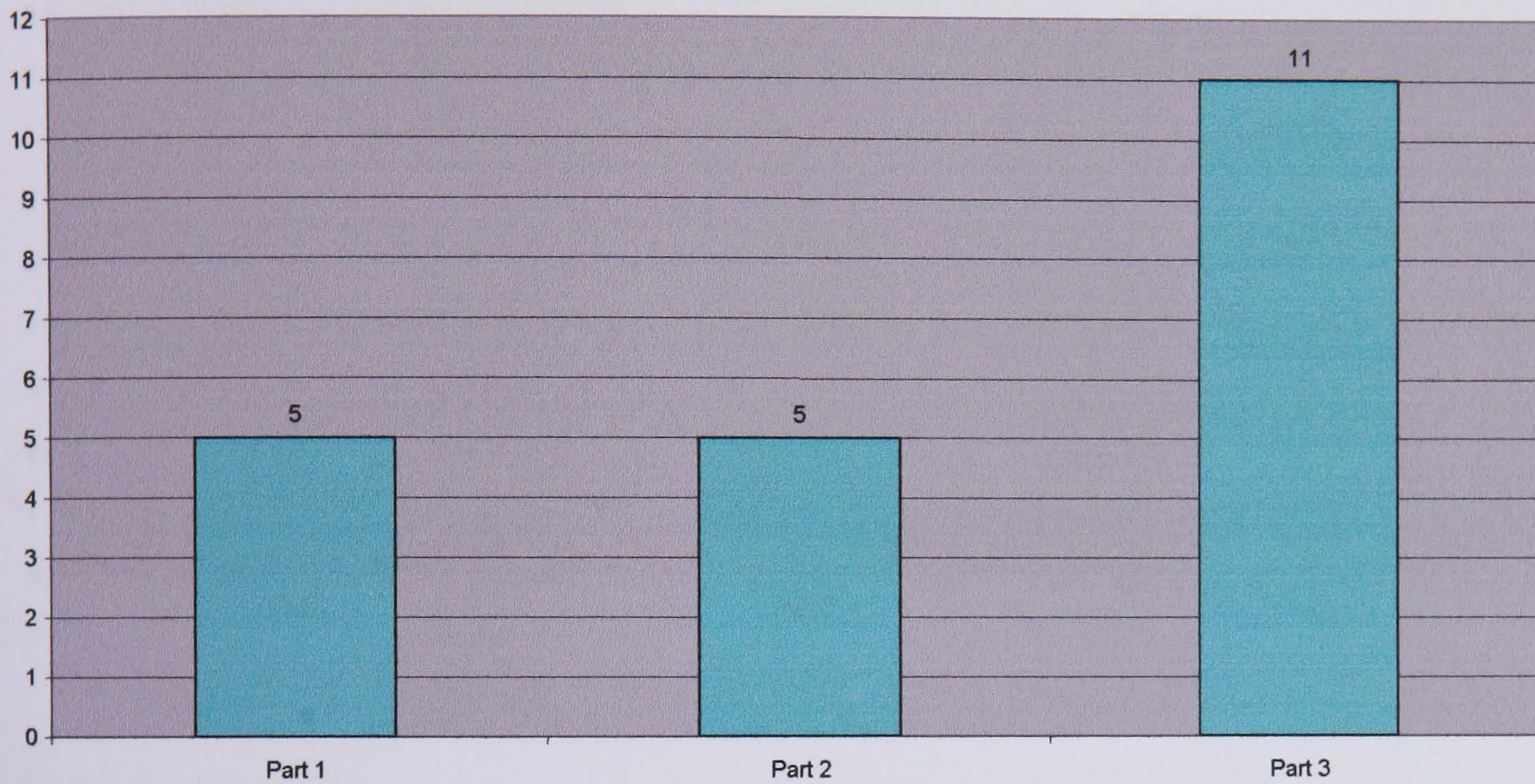
From the above bar charts it can be seen that the SLI children most closely followed the younger, 7 – 8 year old, children in the categories of *mime* used. The only category of *mime* not used by the SLI children is *mental role play*.

Unlike the typically developing children of both age groups who mainly used facial expression *mimes* the SLI children marginally used more verb type *mimes*.

The next level of analysis compared where the typically developing and SLI children used *mime* in *The Puppy Story* (i.e. which interview part):

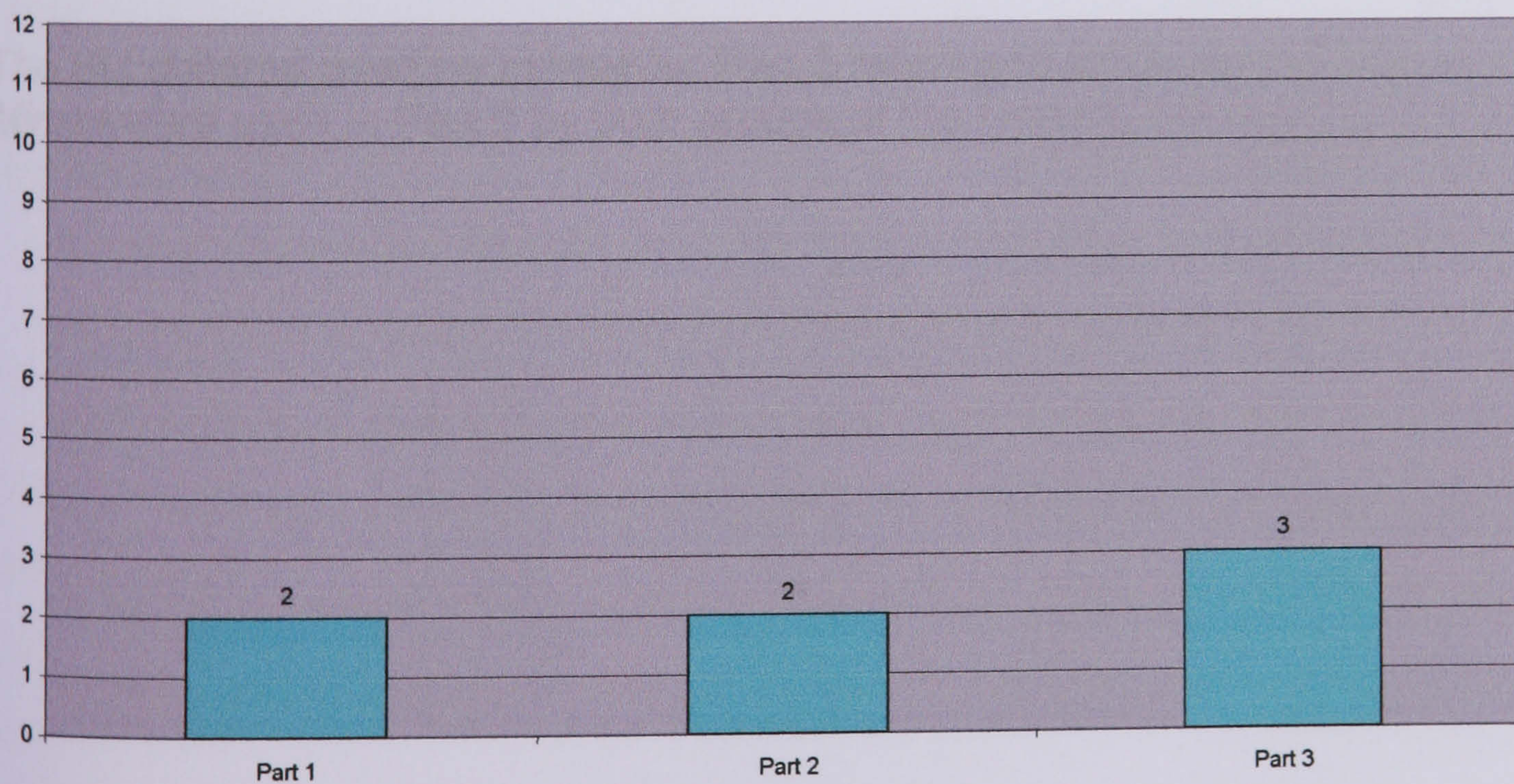
Bar Chart 2.IV. 10.

Total number of *mimes* per story part used by Language Normal children aged 7 - 8 years in *The Puppy Story*

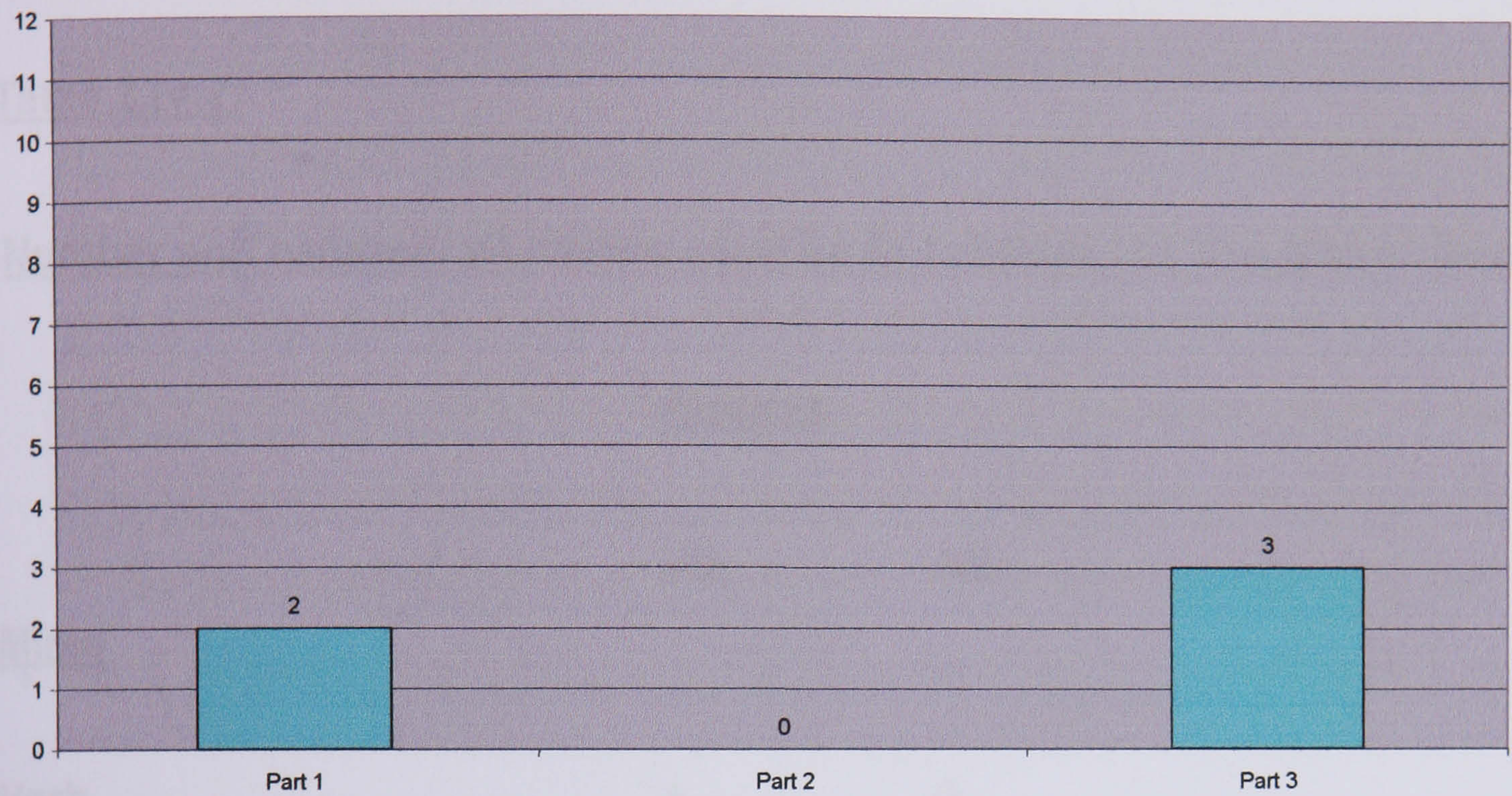


Bar Chart 2.IV.11.

Total number of *mimes* per story part used by Language Normal children aged 10 -11 years in *The Puppy Story*



Bar Chart 2.IV.12.
Total number of *mimes* per story part used by SLI children in *The Puppy Story*



Like the typically developing children of both age groups the SLI children used the greatest number of *mimes* in Part 3 of *The Puppy Story* interview relating to emotional causality. However for both the older and SLI children this difference is marginal as the total number of *mimes* for these two groups is small.

The SLI children used no *mimes* for Part 2 relating to ambivalent emotions. *Mimes* were used in Part 2 by both groups of the typically developing children.

The number and category of *mimes* used by SLI children in *The Kitten Story* interview was also investigated:

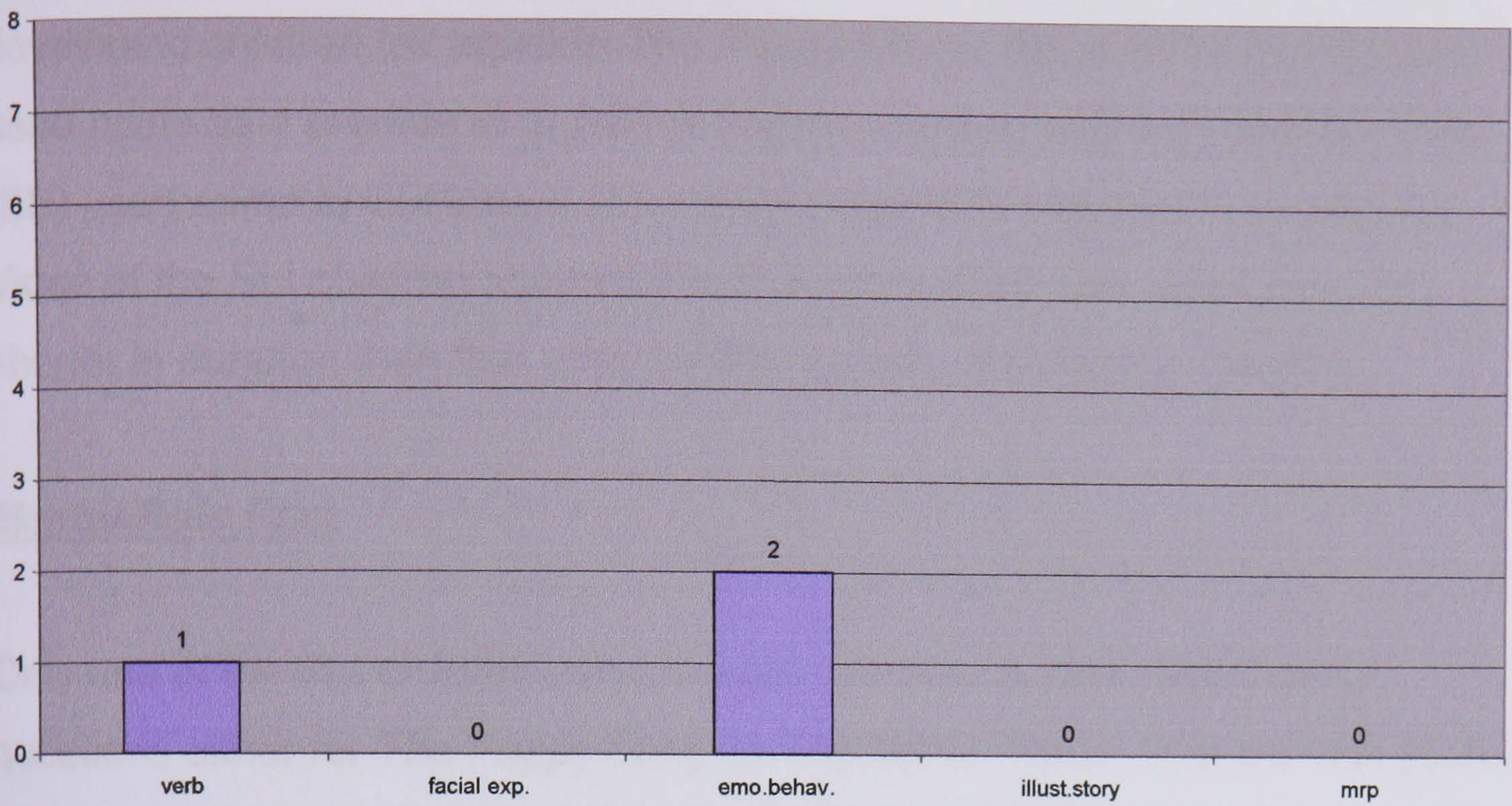
Table 2.IV.7.

Number and category of *mimes* used by SLI children in *The Kitten Story*

<u>Mime</u>	<u>Subject</u>	
	JD	AB
Verb	1	0
Facial Expression	0	0
Emotional behaviour	1	1
Illustrates story	0	0
Mental role play	0	0

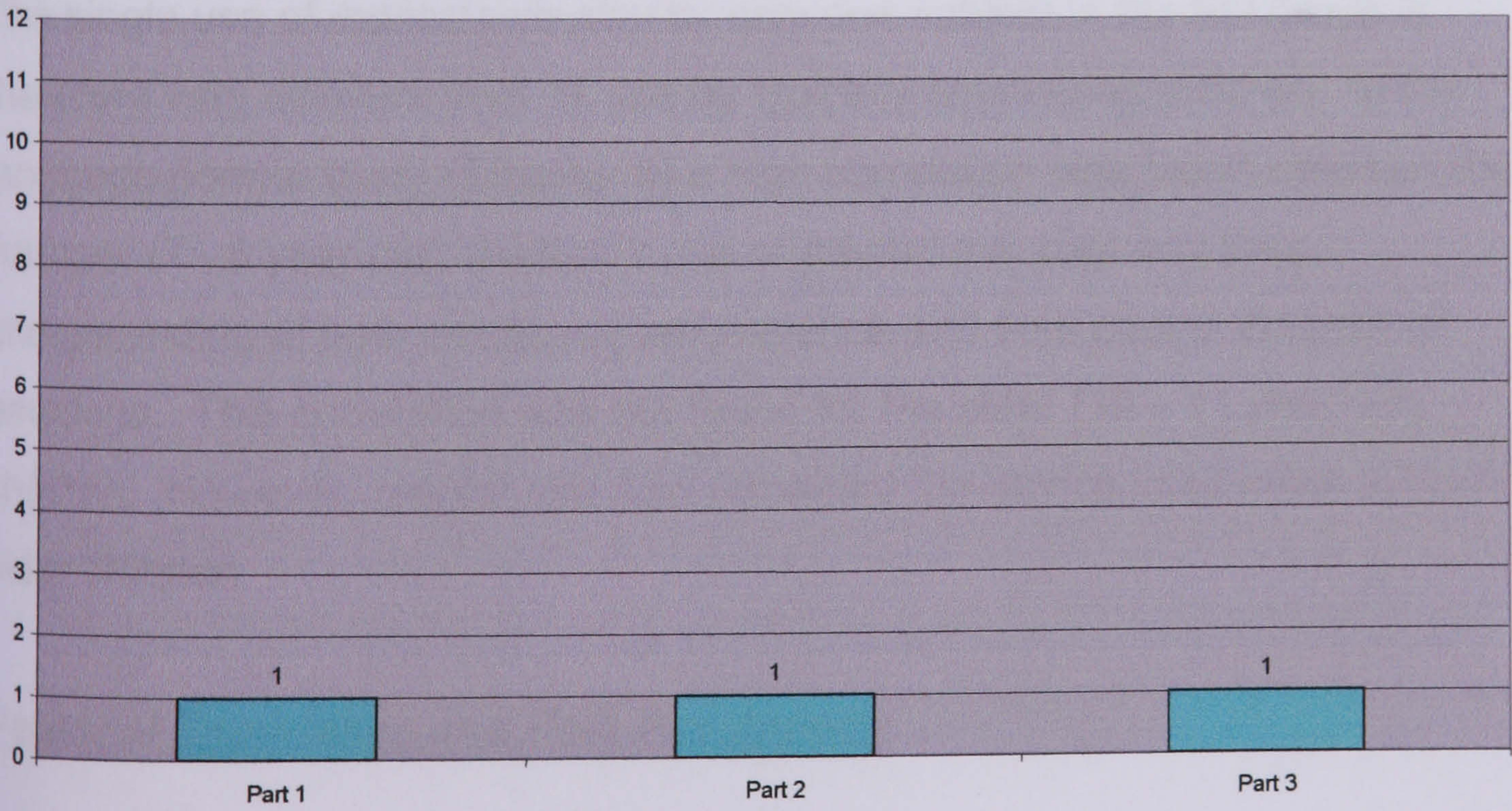
Like the language normal subjects and the SLI children for *The Puppy Story* not all the SLI subjects used *mime* in *The Kitten Story*. ER and GG had no recorded use of *mime* for *The Kitten Story*. GG had no recorded use of *mime* for either story. The *mimes* used by the SLI children were of types used by the language normal children and SLI children in *The Puppy Story*. However fewer categories were represented by the SLI children in *The Kitten Story* (2 vs. 4 in *The Puppy Story*). Please compare **Bar Charts 2.IV.9.** page 429 and **2.IV.13.** below.

Bar Chart 2.IV.13.
Total number of *mimes* per category used by SLI children in *The Kitten Story*



Bar Chart 2.IV.14. below shows the number of *mimes* used by the SLI children per story part in *The Kitten Story*.

Bar Chart 2.IV.14.
Total number of *mimes* per story part used by SLI children in *The Kitten Story*



The number of *mimes* is spread evenly between all three story parts including Part 2 relating to emotional ambivalence.

Overall, the *mime* used by the SLI children in both *The Puppy Story* and *The Kitten Story* was less complex and elaborate than that used by the typically developing children (all ages) in *The Puppy Story*. None of the SLI children used *mime* as a prelude to or part of *mental role play* and only one SLI child (ER) used *mime* to illustrate a short story created to respond to a question. Video of the SLI children showed that the *mime* used was, apart from ER, shorter in duration than that used by the typically developing children.

Mental Role Play

Only one of the SLI children used *mental role play* in their response to questions either for *The Puppy Story* or *The Kitten Story*. This was ER (C.A. 9 years 3 months) in Part 3 of *The Puppy Story* interview.

GG (C.A. 9 years 10 months) did use reported speech in the character of Bill's parents and Bill when he was re-telling *The Kitten Story*. However, this does not constitute an example of the cognitive-linguistic device of *mental role play*. Unlike the typically developing children GG was not using Bill's parents or the character of Bill to reply to the interview questions.

The single use of *mental role play* by only one subject in the SLI group is therefore very different from its use by typically developing children. In the language normal study (Chapter 3) a high correlation was found between the younger (7 - 8 year old) children's use of *mental role play* and their understanding of both emotional ambivalence and their causal theories of emotions. This correlation was not found for the older (10 – 11 year old) children. However, *mental role play* remained the device used most by these older children.

Personal Experience and Folk Psychology

There were no examples of the use of *personal experience* in the SLI data and only one use of *folk psychology*. In the language normal data 3 out of 8 boys and 1 out of 8 girls at age 7 – 8 years used *personal experience*. This

had increased slightly by age 10 - 11 years to 5 out of 8 boys and 3 out of 8 girls. Further research with a larger number of SLI subjects is necessary before it is possible to say if the omission of *personal experience* from the data of these 4 SLI children represents a significant difference to typically developing children.

One SLI subject (ER C.A. 9. 3.) did appear to directly ascribe personal details (relating to his own likes and dislikes) to story protagonists (Mike and Pepper). It is possible that this represents an emergent ability to use personal experiences to support arguments relating to why people (story characters) act, feel and think as they do.

However, examples of such use of personal allusion had not been found in the data of any of the typically developing children who made clear when they were referring to themselves, their own personal likes, dislikes and experiences and those of the story protagonists. Further research with younger children (4 – 5 years of age) and less able older children (7 - 8 years of age) would be useful to investigate this.

AB (C.A. 11 years 9 months) was the only SLI subject to use *folk psychology*. In the language normal data 2 out of 8 boys and 2 out of 8 girls at age 7 – 8 years used folk psychology. This had increased by age 10 – 11 years to 5 out of 8 boys and 4 out of 8 girls. Further research with a larger cohort of subjects is required to confirm if the low incidence of *folk psychology* recorded by the SLI children remains comparable to that of the younger (7 - 8 years of age) typically developing children.

Although AB (C.A. 11. 9) clearly used an example of *folk psychology* in his reply to interview questions to Part 3 of *The Puppy Story* the meaning of his response was unclear. However, this was not untypical of examples of the use of *folk psychology* by the younger typically developing children (7 – 8 years of age).

Summary of Results (2.1. – 2.4.)

- The mean number of cognitive-linguistic devices used by the SLI children (both stories) was smaller than that used by the typically developing children of either age group (*The Puppy Story*).
- The SLI children, unlike the typically developing children of both age groups, used the least number of devices when answering questions relating to ambivalent emotions.
- The SLI children used mainly *mime* in their response to questions about *The Puppy Story*. The typically developing children of both age groups used mainly *metaphor* and *mental role play*.
- Comparing the proportion of the total number of devices used for *The Puppy Story*, the SLI children's use of *mime* was substantially greater than that used by the language normal children while their use of *mental role play* was substantially less. The proportion of *metaphor* used by the SLI children and the typically developing children of both age groups was similar.
- The majority of the *metaphors* used by the SLI children (*Puppy & Kitten* stories) either related to single, non complex emotions or were used to avoid emotional complexity (ambivalent or multiple emotions). The greatest numbers of *metaphors* created by the SLI children were based on external characteristics. This category of *metaphor* is most usually found in language normal children at age 4 – 6 years and no examples were found in the language normal children's data for this study (7 – 11 years). The language normal children in both age groups used mainly spatial *metaphors* and all but one of these (1 out of 34 recorded spatial *metaphors*) were used to describe complex, contradictory emotions.

- The SLI children, unlike the typically developing children used the least number of *metaphors* when responding to questions related to emotional ambivalence (part 2 of the stories). For language normal children at age 7 – 8 years *metaphor* was the device used most in part 2 of *The Puppy Story* interview. This use increased for girls at age 10 – 11 years and was split between *metaphor* and *mental role play* for boys aged 10 – 11 years.
- The SLI children used the same types of *mimes* as the language normal children apart from *mime* associated with *mental role play*. No example of this type of mime was found in the SLI data.
- The SLI children, like the language normal children, used the greatest number of *mimes* in part 3 of *The Puppy Story*. Unlike language normal children the SLI children had no examples of *mime* in part 2 of *The Puppy Story* relating to emotional ambivalence.
- Overall the *mimes* used by the SLI children were less elaborate and of shorter duration than those used by the typically developing children.
- One SLI subject (ER) used *mental role play* once in his responses to interview questions (*The Puppy Story* and *The Kitten Story*). For typically developing children a high correlation was found between the younger (7 – 8 years of age) children's use of *mental role play* and their understanding of emotional ambivalence and emotional causality. This correlation was not found for the older children (10 – 11 years of age). However, *mental role play* remained the device used most by these older children (*The Puppy Story*).

3. A comparison of the SLI and Language Normal children's abilities to differentiate sad/angry feelings in Part one of *The Kitten Story* (same valence emotions).

The structured interview for Part 1 of *The Kitten Story* questioned children about their ability to identify and understand multiple, negative emotions (sadness and anger) experienced at the same time by Bill, the story protagonist. Although exploration of these skills was not part of the original research, the data obtained did allow for further investigation of SLI children's emotional maturity in comparison with typically developing children.

Both the SLI data and the 7 – 8 year old language normal children's data from the replication study (Chapter 2) provided examples of subjects' experiencing difficulties in differentiating sad/angry feelings in part one of *The Kitten Story*.

Three out of the four SLI subjects: AB (CA 11.9), GG (CA 9.10) and ER (CA 9.3) found it difficult to differentiate between sad and angry feelings. Three out of the four typically developing 7 – 8 year old children (all aged 7 years) also experienced difficulties. However, the SLI children's difficulties in this area were more extreme than those of the typically developing children and they also found it difficult to co-ordinate sad/happy feelings in Part two of *The Kitten Story*.

In contrast to the 7 – 8 year old language normal subjects and the SLI subjects, the 10 – 11 year old language normal children in the replication study expressed no difficulties or confusions in differentiating sad and angry feelings. This provides further evidence that the SLI children (chronological ages 13 years 2 months – 9 years 3 months) presented most like 7 – 8 year old typically developing children.

Donaldson and Westerman's protocols did not provide any scoring system for evaluating subjects' understanding of same valence emotions. The following section presents data from the three typically developing 7 – 8 year old

children who experienced difficulty differentiating negative emotions together with data from the four SLI subjects. Explanation of, and reasons for, the SLI and 7 – 8 year old typically developing children's difficulties with same valence emotions is then explored further in the Discussion section of this chapter.

Language Normal children's differentiation of same valence negative emotions

Twelve typically developing children had been seen during the first replication study (Chapter 2). Out of these twelve children, three of the four 7 – 8 year olds presented with some confusions regarding same valence negative emotions. None of the 10 – 11 year old children presented with difficulties in this area.

All three of the typically developing children had difficulties maintaining the distinctness of the emotions sad and angry. MA (7 year old boy) stated that feeling angry and feeling sad were the same things. JB (7 year old boy) was able to differentiate angry and sad in terms of word meaning (*'Cos sad is not a word....like when you get really mad and....um....start to like wreck stuff*). He also agreed that sad and angry would look different on somebody's face. However he then maintained that they would feel the same inside.

LA, a 7 year old female subject initially stated that angry and sad are the same but then went on to qualify her statement and spontaneously attempted to distinguish an angry facial expression from a sad one: *But sometimes...anger's....more.....straighted faced than sad*. LA was also able to explain how angry and sad could interact and overlap. She was able to keep the two distinct feelings in mind (using *upset* as a synonym for sad) and then predict how these feelings would look if somebody else was experiencing them: *If you got confused and it would all mix up together and she would feel anger and upset at the same time and it would just look like she'd really dull*

and straight face. LA's understanding of the depressive quality of sadness (dull) was reinforced later when she explained the difference between angry and sad: 'Cos *anger's*.....*a little bit more than upset.* 'Cos *upset's just dull...but anger's really cross.*

Both of the 7 – 8 year old boys in the replication study experienced difficulties differentiating same valence emotions. Only one out of the two girls experienced any similar confusion, however she was able to revise her initial statement and go on to make sophisticated comments regarding the emotions *sad* and *angry* being experienced at the same time. While it is admitted that the numbers are very small, this gender difference is reminiscent of the gender differences found in the larger language normal study (Chapter 3) between girls' and boys' ability to express their understanding of ambivalent emotions. Further research with a larger cohort of subjects would be useful to see if language normal boys do in fact experience more difficulties than girls in talking about same valence emotions.

Specific Language Impaired children's differentiation of same valence negative emotions

JD (13 years 2 months)

JD was the oldest SLI subject and the only one to express an understanding of same valence emotions (*sad/angry*). JD identified that the story protagonist, Bill, was sad at losing his cat and also angry. JD identified the anger as being directed at the mother who did not close Bill's open bedroom window. JD did not identify anger which Bill directs at himself for leaving the window open. When probed by the researcher JD acknowledged that sad and angry feelings could be experienced together and spontaneously used a *metaphor* to express this (*mixed feelings*).

JD responded appropriately to the temporal and spatial questions regarding same valence emotions creating a further *metaphor* to support his answer.

(The two feelings would *Stick together*). JD was also able to demonstrate his understanding that same valence feelings co-exist rather than replace one another.

AB (11 years 2 months)

AB experienced considerable difficulties in understanding and maintaining the difference between same valence emotions sad/angry. Like JD he was able to correctly identify Bill's feelings at the loss of his kitten Snowball (sad and angry). However, he experienced difficulties distinguishing how Bill would act and look when sad and described them both in terms of anger: *(at beginning of utterance looks at facial expression cards & then looks at story picture cards) Uh..he'd really like..kick the bed..really hard or put his head against the wall n'.. (□) because he was so angry. U'..because he forgot to..just because he forgot to close the window..it all made it.. {MIME (very slight nod of head as if hitting against a wall – very brief)}* and then later describing looking sad: *And like he looks really bad..'cos he's really bad tempered.*

When AB was questioned specifically about angry feelings his responses were limited and he described an angry facial expression in the same way as he had previously described a sad face (*frown*). Only when the researcher co-ordinated *angry* and *sad* in the same sentence did AB explicitly state they were different. However, he experienced great difficulties when he was prompted to say how and why they are different and described sad as synonymous with cross (anger): *when he's really..sad he's really cross and he's..and he just..he just..uh..I can't explain.* Eventually AB fell back on using synonyms and contrasting opposites (happy/sad): *Like sad ud' be really cross and happy would be..delightful maybe.*

AB was able to admit sad and angry feelings are experienced differently but was adamant, despite some initial confusion, that they would look the same on someone's face. It is possible that AB's responses showed an over reliance on the visual information provided by the story picture cards. AB initially agreed that angry and sad looked different on somebody's face but

then, looking at the last of the story picture cards sequenced on the table in front of him, stated that the facial expression would look the same. AB earlier identified that Bill feels both angry and sad at the end of (part one) of the story, yet Bill is only shown with one, facial expression (sad) on the last picture card. However, this does not entirely explain AB's difficulties contrasting angry and sad feelings or his own explanations which made sad and angry feelings synonymous: *Uh..when..because sad is still being cross the same as being angry as well isn't he.*

However, AB did state that the emotions are felt at different times and that when Bill is angry the sad feelings go away. At this point AB was conceptualising the emotions as distinct and different and existing independently of each other. (He also stated that the two feelings mix together although it is possible that he revised his initial answer that they stay separate in response to the facial expression of the researcher).

GG (9 years 10 months)

GG, who presented with the strongest language profile, also found it difficult to contrast angry and sad. Like AB he found it very difficult to say how Bill would act when he was angry and eventually conceptualised anger as feeling sad: *(no eye contact & struggle ++)* *Um.... (sigh++) um.....um..he'd.. (looking at story picture cards) he could.....um just..feel sad?*

Also like AB he changed the task from differentiating two negative emotions to differentiating negative and positive emotions (angry/happy): *Angry and you'll..you could have a face like (looks at facial expression picture cards – gestures briefly with hand towards angry picture) ..um....um when you're angry?... N'then like a happy face..when you're smiling.*

GG initially stated that angry and sad would look the same on someone's face and only revised his answer when prompted by the researcher. However, even then when he went on to describe the two expressions he changed them from angry and sad to happy and sad: *'Cos (looks at facial expression cards on table) um..happy (holds up "happy" card) and then there's (points to one*

picture briefly then changes his mind and points at sad picture) ..um sad. This showed how difficult it was for GG to hold on to the two negative emotions sad/angry without slipping back into contrasting negative and positive emotion, even with the visual supports of the facial expression cards in front of him.

ER (9 years 3 months)

ER was the youngest SLI subject and also had the most pervasive language impairment.

ER stated that sad and angry were different and then used the facial expression cards in a very literal way to distinguish the negative feelings – indicating that the mouth is drawn differently on the cards and that the angry face has two frowns on it and the sad face has none. This was somewhat reminiscent of the typically developing 7 year old girl (LA) who described anger as *more straighted faced than sad*. However, when ER was asked to think of these emotions in terms of other people he stated that the emotions would look the same on someone's face.

Unlike any of the other SLI subjects or the language normal children in the second study, ER also demonstrated difficulties in differentiating between negative feelings in *The Puppy Story* and described *anger* in terms of being sad and crying: *Angry feelings..um like (to self)..... Ss'sad..because um..dog could cry and..and sa'..and dogs mi'..could dry (phonological error – fronting)*. This was very similar to GG's response in *The Kitten Story* who also conceptualised anger as feeling sad.

DISCUSSION

This discussion is divided into five sections:

1. A discussion of the SLI group's experimental results (Emotional Ambivalence Levels and Feeling Change Levels) in relation to the information obtained from parent interviews and parent and teachers' questionnaires.
2. A discussion of the SLI group's experimental results in comparison with the results obtained from the Language Normal group in the second study (Chapter 3).
3. A discussion of the SLI subjects' experimental results in relation to their individual language profiles and their social and emotional development at the time of the research procedures (as reported by parents and teachers).
4. A discussion of the SLI subjects' difficulties in understanding same valence negative emotions (sad/angry) in part one of *The Kitten Story*.
5. A discussion concerning the use of picture supports for *The Kitten Story*.

**1. A discussion of the SLI group’s experimental results
(Emotional Ambivalence Levels and Feeling Change Levels)
in relation to the information obtained from parent interviews
and parent and teachers’ questionnaires.**

Agreement had been found between the parents’ and teacher’s perception of the children’s social and emotional functioning. These perceptions were also found to be consistent with the children’s language profiles (see Method pages 351 - 358). This section discusses how well the parents’ and teachers’ perceptions related to the children’s experimental results.

Parent interviews

For ease of comparison the emotional age equivalents taken from the parent interviews and the children’s Emotional Ambivalence and Feeling Change levels are presented below in tabular form (**Table 4.7.**). Further information from the parent interviews can be found in **Table 4.4.** (Method page 352).

Table 4.7.

	JD(13.2)	AB(11.9)	GG(9.10)	ER (9.3)
Emotional Age Equivalent (Parent interviews)	Between 8-9yrs	Between 6-7yrs	Between 7-8yrs	Varies from very immature to mature depending on context
<u>The Puppy Story</u> Emotional Ambivalence Level	1	1	1	2
<u>The Puppy Story</u> Feeling Change Level	2	1	2	1
<u>The Kitten Story</u> Emotional Ambivalence Level	1	1	2	1
<u>The Kitten Story</u> Feeling Change Level	1	1	1	1

Table 4.7. SLI children’s Emotional Age Equivalents reported in the parent interviews together with their Emotional Ambivalence Level scores and Feeling Change Level scores for both stories. Subjects’ chronological ages are given in brackets.

All of the parents gave an emotional age equivalence which was less than their child's chronological age. This indicated that the parents perceived their child as presenting as emotionally immature for his age. This was consistent with the experimental results which showed the children's emotional understanding was most similar to typically developing children aged 7 – 8 years.

For the three parents who were able to give emotional age equivalents, AB obtained the lowest age (6-7years) and also presented with the least mature profile of scores for emotional understanding for both stories (all at Level 1). His parents reported high levels of concern regarding his social and emotional maturity and the effect this would have on his future.

GG presented marginally with the most mature profile of scores for emotional understanding obtaining two Level 2 scores and two Level 1 scores. He obtained the strongest language profile of all three language impaired children and was given an age equivalence by his mother which was the same as the youngest typically developing children in the second research study (7 – 8 years).

JD, the eldest SLI subject, had been given the oldest age equivalence for social/emotional maturity by his mother (8-9 years). This was consistent with his ability to understand that two different (but not contradictory) emotions can be experienced at the same time (sad/angry). This is usually established by 9 years of age in typically developing children (see later this Discussion page 528). JD was the only SLI subject to show this level of understanding.

ER's data had been the most problematic to score using Donaldson and Westerman's protocols. This was because his responses had reflected elements of language normal children's thinking across all levels (0 - 3) rather than just adjacent levels. However, this was consistent with ER's mother's statement that his social and emotional maturity varied from a pre-school level to quite mature for his age.

The children's emotional immaturity identified through the experimental procedures was thus supported by information obtained from the parent interviews.

Parent and teachers' questionnaires

Information from the parent and teacher's questionnaires is summarised in **Tables 4.5.** and **4.6.** (Method pages 355 and 357). Both parents and teachers expressed concern regarding the children's social skills and emotional immaturity. This was consistent with the experimental findings of this present research which found that the children with impaired language skills presented as less mature than expected for their chronological age when compared to the typically developing children in the study.

There was no evidence from the questionnaires that any of the children were presenting with conduct or pragmatic communication disorders. However, both parents and teachers expressed the same degree of concern at the children's levels of anxiety which ranged from moderate to high.

The information obtained through the parent and teachers' questionnaires is also consistent with the preliminary findings of *The Manchester Language Study* (reported in Conti-Ramsden and Botting, 2005). This longitudinal study looked at wellbeing in children with SLI. Information was obtained through teacher, child and parent questionnaires at ages 7 years (242 children); 8 years (234 children); 11 years (200 children); 14 years (100 children) and 16 years (132 children). No evidence was found of increased conduct disorder at either 11 or 16 years of age. Difficulties found were described in the study as social rather than anti-social and related to poor emotional wellbeing including impoverished friendships and peer relationships and depression and anxiety.

The findings of this present research regarding the SLI children's social functioning are also supported by the results of the Snowling et al. study

(2006). This study looked at the psychosocial outcomes at 15 years of age of 71 children identified preschool with speech-language impairment. The children participated in a psychiatric interview and this information was supplemented by two questionnaires: a self-report inventory and a parent's questionnaire based, like this present research, on the *Achenbach* (1991) checklist. (The authors acknowledged the lack of teacher ratings as a limitation of their study).

The Snowling et al. study found no difference between those children whose speech-language difficulties had resolved by 5.5 years and the control group who had no history of speech-language impairment. However, there were significant differences for those children whose language difficulties persisted into the school years. Overall the rate of psychiatric disorder was low in the study sample and when present appeared to be associated with co-morbidities such as ADHD and, in particular, low nonverbal intelligence. However, the children with specific and persisting receptive and expressive language difficulties were found to have significantly higher levels of social impairment than their typically developing peers. This could not be explained by simple general immaturity. The study ends: *children with language difficulties at school entry are a vulnerable group who require not only language intervention but in some cases also emotional and behavioural support.*

In conclusion, the experimental results of this present research were consistent with both the parents and teachers' perceptions of the children. These perceptions were also found to be consistent with other researchers' findings using similar methods (questionnaires) to elicit measures of social and emotional wellbeing in SLI children.

2. A discussion of the SLI group's experimental results in comparison with the results obtained from the Language Normal group in the second study (Chapter 3).

The levels of understanding obtained by JD (C.A. 13.2), AB (C.A. 11.9), GG (C.A. 9.10) and ER (C.A. 9.3) in response to *The Puppy Story*, using Donaldson and Westerman's model, most closely resembled those of the 7 – 8 year old typically developing children. The language impaired children's understanding of emotional ambivalence was similar to the less mature 7 – 8 year old children. This represents an apparent delay in the language impaired children's understanding of both emotional ambivalence and emotional causality.

Evidence which reinforces the conclusion that children with impaired language development are simply less mature for their age in this respect than language normal children was seen in the remarkable closeness with which the language impaired children followed the same use of cognitive-linguistic skills as the younger typically developing children. This also allowed the differences between the two groups, where they did occur, to stand out more clearly.

Similarities between the SLI children's data and the data of the typically developing children in the second study

There was no suggestion in the data that the children with impaired language were developing alternative effective ways of understanding and resolving emotional ambivalence from those developed by the language normal children. None of the children with impaired language used cognitive-linguistic devices which were not represented in the language normal data.

For *The Kitten Story* the children with impaired language had been given paper and pencils and told they could draw the answer to a question if they preferred. None of these children elected to do this even though two of the

children, AB and GG, were reported by teaching staff and parents to have above average drawing skills for their age. AB talked about his good drawing abilities to the researcher before the start of the interview for *The Kitten Story* but made no attempt to use the materials available to support his answers to questions.

Comparing the SLI transcripts for both *The Puppy Story* and *The Kitten Story*, all of the cognitive-linguistic devices identified in the data from the language normal children were found in the language impaired children's data apart from the use of *personal experience*. Only a small number of examples of *personal experience* were recorded in the language normal children's data and this increased with age (11 at age 7 – 8 years and 25 at age 10 – 11 years) suggesting it is a device used by more emotionally mature children. The lack of *personal experience* in the language impaired children's data may therefore be due to a combination of the small number of subjects in the SLI group and the fact that their skills were delayed in line with the least mature 7 – 8 years old children.

One of the children with impaired language (ER) did appear to directly ascribe personal details (relating to his own likes and dislikes) to story protagonists (Mike and Pepper). When explaining the closeness of Mike and Pepper's relationship he described how they both enjoyed watching videos together. Later, when ER was asked what might make angry feelings go away he gave an example of Pepper making reparation for the damage he had done by doing Mike's writing for him. ER's mother stated that watching videos was ER's favourite pastime and that he hated writing. It is possible that ER's mention of videos and writing in connection with Pepper and Mike represents an emergent ability to use personal experiences to support arguments relating to why people (story characters) act, feel and think as they do.

Further research with younger children (4 – 5 years of age) and less able older children (7 – 8 years of age) to see if they also present with similar responses assigning personal likes and dislikes to story protagonists would be useful to investigate this possible development in children's ability to use

personal experience as a means of answering emotionally complex questions. Further research is also required to see if children with impaired language have specific difficulties using examples from personal experience to support their understanding of the emotions and behaviours of others.

The similarities between the language impaired children's responses to the interview questions and those of the language normal children, specifically in their use of the same cognitive-linguistic devices, may be due to the language impaired children's strengths in figurative language, conceptual development and semantics. For example the use of *metaphor* which was found to be important in language normal children's responses to the interview questions would require reasonable conceptual and semantic abilities for its development. This could be investigated further by selecting a group of children with impaired language who had strengths in the areas of syntax and grammatical development but poor conceptual and semantic skills. It could then be seen if they also used the same cognitive-linguistic skills as the typically developing children and children with impaired language development presented in this third study.

Differences between the SLI children's data and the data of the typically developing children in the second study

Although the overall approach used by the children with impaired language to understand and resolve ambivalent emotions was the same as that of the typically developing children, both quantitative and qualitative differences were noted in their use of the cognitive-linguistic devices. These differences may help to explain why the language impaired children presented as less mature for their chronological age when compared to the children with typical language development.

Of the five cognitive-linguistic devices identified in this research (*metaphor*, *mental role play*, *mime*, *folk psychology* and *personal experience*) *metaphor* and *mental role play* were the most important in the language normal data. For both age groups *metaphor* and *mental role play* were the devices used

most by the typically developing children when responding to the interview questions for *The Puppy Story*. Very few *metaphors* were used by the 7-8 year old children for *The Twins Story* and no *metaphors* were used by the 10 – 11 year old children when responding to *The Twins Story*. This suggested that *metaphor* was a useful and important device when answering questions on emotionally complex information. In addition, for both age groups of language normal children, *metaphor* was the device used most when answering questions to part two of *The Puppy Story* which dealt with ambivalent emotion. This suggested that *metaphor* was especially useful when answering questions about contradictory emotions.

Mental role play was used most by the language normal children of both ages to answer questions relating to emotional causality (what causes emotions to change) in part three of the interview questions. A significant correlation was found between younger (7 – 8 years of age) children's use of *mental role play* and their understanding of emotional ambivalence and their theories about what causes emotions to change (emotional causality).

Donaldson and Westerman in their 1986 paper proposed that it is the change in children's thinking about what causes emotions to change that promotes their more mature understanding of emotional ambivalence. Specifically children begin to realise that it is internal states which are important in mediating emotional responses rather than simply the events which give rise to them. The results above suggest that *mental role play* may play an important part in advancing this change in typically developing children's thinking.

Results for the language normal children also showed that their use of *mime* decreased with age and was the least used device by age 10 – 11 years. However, their use of *personal experience* increased with age. The use of *folk psychology* remained relatively stable over time.

None of these results, outlined above, obtained from typically developing children were replicated by the language impaired subjects. Each of the

cognitive and linguistic devices is now looked at in turn and the differences in its use by the language impaired children detailed.

Mime

Unlike the typically developing children of both ages who used mainly *metaphor* and *mental role play*, the children with impaired language used mostly *mime* in their response to the interview questions for *The Puppy Story*. Given these children's expressive language difficulties this might seem predictable. However, further analysis of the *mime* used by the language impaired children showed that this was less sophisticated than that used by the typically developing children.

Five different types of mime had been identified in the typically developing children's data: *verb/gesture*; *facial expression*; *emotional behaviour*; *illustrates story*; *mental role play*. Each of these categories of *mime* were represented in the language impaired children's data (*Puppy Story* and *Kitten Story*) apart from *mental role play* where *mime* was used in the context of, or as a prelude to, the child taking on the role of a story protagonist. However, the majority of the *mime* used by the younger typically developing children related to narrative (*illustrating a story* + *mental role play*) or to demonstrating a facial expression. *Mental role play* as a device had found to be significantly correlated with the younger children's understanding of complex emotions. By 10 – 11 years of age this narrative context for *mime* had all but disappeared with all except one *mime* related to demonstrating facial expressions. This suggests that older children are able to reflect on the narrative structure of an emotion without recourse to specific cognitive and linguistic devices such as *mime* (and *mental role play*). For both age groups *mime* was used more by boys than by girls.

A greater proportion of the SLI group (3 out of 4 subjects, JD, AB, ER) used *mime* when compared to the language normal children (both age groups). This could be a result of the smaller SLI group which would disappear with a larger cohort of subjects, or because the language impaired children were all boys unlike the mixed sex language normal group, or because of the subjects'

expressive language difficulties. GG, who had the strongest overall language profile and with all expressive language subtests within the average range, was the only subject not to use *mime* in any of his responses to either of the stories.

However, although proportionally the children with impaired language used more *mime* than the typically developing children, there was no evidence that the language impaired children were using *mime* to express ideas and answers to questions for which they had the receptive understanding but not the expressive language. Unlike the language normal children none of the language impaired children used *mime* when answering questions relating to emotional ambivalence (part two of *The Puppy Story*). For *The Puppy Story* the children with impaired language used marginally more *verb* type *mime* which illustrated an action. Very few, if any, examples of *mime* related to supporting narrative explanations in response to questions; either *illustrating a story* or in conjunction with *mental role play*.

These types of *mimes* might have been expected if the children with impaired language had been trying to convey an understanding of the complex emotional responses of the characters in the stories which was beyond their expressive language capabilities. In addition the language impaired children tended to use words rather than *mime* even for those questions which were most suited to *mime*. For example when the subject was asked what the story protagonist's face would like when he was experiencing a certain emotion. Unlike the language impaired children the typically developing children mainly used *mime* for answering this type of question as a shortcut to using verbal language.

Overall the language impaired children presented as having less of a facility for *mime* than the typically developing children and their *mimes* were of shorter duration, often little more than a gesture. It is perhaps surprising that *mime* was not used more extensively by these subjects in their response to interview questions. However, it further confirms that these children with impaired language skills were not struggling to convey information which was

above their level of verbal expression. It was the knowledge itself, rather than the means to express it, which was lacking in this group.

The only subject with impaired language who did not use any *mime* (GG) presented with all 3 subtests of syntactic abilities within the average range for his age. The other 3 language impaired subjects all had below average standard scores in all 3 subtests. Further research is required to see if the use of *mime*, and specifically those types of *mime* not related to narrative skills (*illustrating a story* and *mental role play*), is a particular feature of children with poor syntactic development.

Metaphor

Apart from AB, the language impaired children, like the typically developing children, used *metaphor* in their responses to the interview questions. Kovecses (2000) emphasises the figurative nature of the language of emotion and especially the metaphorical character of folk models of emotion. Keil, 1986, claims that the development of children's metaphor is a reflection of their conceptual development. The language impaired children's use of *metaphor*, given their strengths in conceptual as well as semantic development and figurative language, was therefore not surprising. However both qualitative similarities and differences were evident in the way the children with impaired language used *metaphor*. It should also be remembered that AB, who presented with the strongest profile of semantic abilities as well as conceptual knowledge within the average range for his age, used no *metaphors* in his responses to either *The Puppy Story* or *The Kitten Story*. A possible explanation for this is presented later in this Discussion.

For *The Puppy Story* two out of the three recorded *metaphors* were by GG who had the strongest language profile. Both of his *metaphors* were of types noted in the data of the typically developing children: Spatial and Transformation. These types of *metaphor* were among the most common found in the data of the language normal children of both age groups. (Spatial *metaphors* were the most frequently used type and Transformation *metaphors*

were the third/fourth most commonly used type, see Results for details). GG used these *metaphors* to describe the story protagonist's complex and contradictory feelings toward his dog in parts 2 and 3 of the story. Mike's loving feelings for Pepper were *turned around* by the dog's actions although he still had love for Pepper *in his head*. In his responses to *The Puppy Story*, GG was thus following typically developing children's use of *metaphor* to describe complex emotional and psychological states.

The third *metaphor* noted in response to *The Puppy Story* was by ER who presented with the most impaired language profile with age equivalence on the *CELF* assessment below the basal age of 6 years. ER's *metaphor* was of the External Characteristic type which is based on external physical resemblance, attributes or similarity of action (Mike is angry *like a giant*). This type of *metaphor* usually appears around the age of 4 years in typically developing children (quoted in *Metalinguistic Development* by Gombert, 1992). Billow, 1981, observed 73 3-6 year old children over an entire school year and found that 94% of the metaphors used were of this type. None of the metaphors produced by this age group of children were conceptual in nature which was the main category of *metaphor* used by the typically developing children in this research. These conceptual metaphors do not simply use words in a non-literal sense or make perceptual comparisons (*hair is like spaghetti*). Rather they seek to describe abstract internal psychological states by reference to the child's growing conceptual understanding of the world of objects and actions and how these are related and experienced. Children's use of Spatial *metaphors* which begin to conceptualise the body as a container would be an example of such metaphors e.g. *the top part of his body was loving and the bottom half was angry*.

Gardner, 1980, states that early metaphors are a result of lexical poverty and that it is not until much later that older school age children use metaphors which deliberately violate semantic boundaries. As a language impaired child ER's (C.A. 9.3) use of *metaphor* would be consistent with this claim as well as the type of metaphor noted in much younger children by Gombert and Billow above. In addition ER, unlike GG and the typically developing children did not

use *metaphor* when responding to questions about complex emotion. ER's use of *metaphor* referred only to the single emotion of anger.

Although it is acknowledged that there is no comparable data on typically developing children's use of *metaphor* in *The Kitten Story*, analysis of the language impaired children's responses does provide additional information on its use. Six *metaphors* were noted in the language impaired children's data from three of the subjects: JD, GG and ER. Two of these metaphors (Fluid and Tactile) were represented in the data of the language normal children (*Puppy Story*). They were both by JD and were both used in response to Part one of *The Kitten Story* which discussed same valence emotions, and not the contradictory ambivalent emotion explored in Part two. JD described Bill as having *mixed feelings* (the same valence emotions anger and sadness) which *stick together*.

The Fluid *metaphor* (*mixed feelings*) may have been triggered by the assessment questions and pictures used to assess the language impaired children's understanding of concepts such as *mixed together* and *separate* where the word *mixed* is explicitly stated and illustrated. JD's use of this *metaphor* may therefore not represent an entirely spontaneous and original creation. Nevertheless he does use it appropriately to describe Bill's internal emotional state and was the only one of the four language impaired subjects who was able to convey an understanding of same valence emotions.

The use of Fluid type *metaphors* was found only in the responses to *The Puppy Story* of the older typically developing children (10 – 11 years). However, in terms of conceptual development they refer to the idea of the body as a container and would therefore link to other, earlier represented *metaphors* such as Pressure and Spatial *metaphors*. Lakoff and Kovecses (1987) showed that this category of metaphor played an important role in English speaking adults' conceptualisation of anger. Later research (King, 1989; Matsuki, 1995; Kovecses, 2000) compared the use of metaphor by Hungarian, Chinese, Japanese and English speaking adults to conceptualise anger. The findings showed that in all four cultures adults conceptualised

human beings as containers and anger (or its counterparts) as a kind of substance (fluid or gas) inside the container. Evidence from other languages for a “container” metaphor for anger and its counterparts is also found in Tahitian and Wolof, an African language spoken in Senegal and Gambia (Levy, 1973; Solomon, 1984; Munro, 1991). It was not surprising therefore that Fluid type *metaphors* were found specifically in the children’s responses to *The Puppy Story* (co-ordinating anger/love) and the first part of the interview for *The Kitten Story* (same valence emotions angry/sad). As specific references to fluids are found only in older children’s use of *metaphor* (9+ years, the age by which same valence emotion is understood, see later in Discussion) the findings of this research study may suggest ways in which children’s ability to conceptualise anger develops into the adult model outlined by the earlier cross cultural research.

The remaining 4 out of the 6 *metaphors* used by the SLI children in response to *The Kitten Story* and not so far discussed, were of the External Characteristic and Balance type. Both External Characteristic *metaphors* were produced by ER who was also the only subject to use this type of *metaphor* in *The Puppy Story*. Both *metaphors* again related to single emotions and did not present as an attempt by ER to describe complex emotional states. They described basic emotions and were based on shared physical attributes: Bill is angry *like a lion* and happy *like a butterfly*. (ER had previously briefly referred to Bill as skipping with happiness possibly suggesting the fluttering motion of a butterfly). These *metaphors* are thus typical of the type of metaphor used and understood by language normal children around the age of 5 – 6 years (Gentner, 1988; Gombert, 1992). The *metaphors* are consistent with ER’s language age equivalence (receptive language age: 6 years 3 months, expressive language age 6 years 0 months). It was therefore not surprising that these types of *metaphors* had not been found in the data of the language normal children, with their age range of 7 – 11 years, and who were predominantly using *metaphor* to describe the psychologically complex and ambivalent internal emotional states of the protagonists in *The Puppy Story*.

JD used a Balance type *metaphor* to explain Bill's contradictory emotions in Part two of *The Kitten Story*. JD stated that Bill was *in the middle* of sadness and happiness. GG used a Balance *metaphor* in Part one of *The Kitten Story* when he was discussing same valence emotions. Asked if angry and sad were same GG replied: ...*Well yeah sort of balanced I would say*. This use of metaphor showed a sophisticated way of thinking about feelings. However, the conceptualisation of the two emotions is unusual. Although the data from the language normal children for *The Kitten Story* is limited due to the small number of subjects in the replication study, none of them thought of the emotions *angry* and *sad* as in a state of balance. This idea of balance suggests being poised midway between two feelings states with neither exerting a particular influence or effect. Neither Lakoff and Johnson (1980) Sweetser, (1990) or Kovecses (2000), who looked at cultural and cross cultural conceptualisation of feeling states and the metaphorical and cultural aspects of semantic structure, give examples of this type of understanding or metaphoric expression for experiencing different feeling states.

GG's Balance *metaphor* is however similar to JD's concept of ambivalent feelings as being *in the middle*. JD presented a consistent and coherent expression of ambivalent emotion as poised between the two contradictory feeling states which negates their confusion and distress, both in *The Puppy Story* as well as *The Kitten Story*.

In *The Puppy Story*, although JD does not use a Balance type *metaphor* he does describe Mike's experience and perception of anger and love as *like normal*. In *The Kitten Story* although JD understood that Bill would feel both happy and sad on receiving his new kitten he stated that Bill would feel OK. He then went on to choose the OK (neutral) facial expression picture rather the one depicting confusion, denying that Bill would feel any distress at these contradictory emotions.

Nowhere in the data of the 44 typically developing children, either in the second study or the replication study, is there a similar presentation of contradictory or differing emotions as held in balance, with distress or

confusion correspondingly neutralised. These responses were also not referred to in the manuals written by Donaldson and Westerman and which gave examples of language normal children's responses at the various levels of emotional understanding based on 60 American subjects aged 4 – 11 years.

One example of a Balance type of *metaphor* was found in the typically developing children's data. This was by DC, an 8 year old boy who took part in the language normal study (Chapter 3) and who described Mike's face when he was angry with Pepper as *in the middle* i.e. half way between angry and loving (Part 3 of *The Puppy Story*). However, unlike JD this was DC's only mention of contradictory feelings being balanced and referred to an external representation (facial expression) rather than an internal conceptualisation of emotional ambivalence. There was no attempt by DC to extend this image as a way of neutralising the confusion of emotional ambivalence as was done by the JD. Unlike the children with impaired language who took away the emotional content of feelings which then became *OK, normal, like the same, balanced, in the middle*, DC's *metaphor* quoted above was used to show how Mike's love for Pepper ameliorated his anger rather than neutralised it. This required a sophisticated understanding of contradictory feelings and indeed DC went on to make clear his understanding of ambivalent emotion in his responses to Part 2 of the story.

In contrast to the children with impaired language, DC also used a large range of cognitive-linguistic devices in Part 2 to express his understanding of ambivalent emotions. This included *personal experience* as well as two examples of *mental role play* and three *metaphors*, two of which were spatial.

The way in which JD and GG used Balance metaphors to conceptualise emotion, whether same valence emotion such as angry and sad or ambivalent emotion such as sad/happy was therefore atypical when compared to both the language normal data (exampled above) or cross cultural adult models investigated and examined in the literature by Kovecses (2000) and others (see earlier).

In conclusion the language impaired children's *metaphors* showed examples of typical, delayed and atypical use with the majority (5 out of 9) of *metaphors* used falling into the delayed and atypical categories. The *metaphors* which showed delayed development were all of those used by ER: Mike is angry *like a giant* (*Puppy Story*) and Bill is *Really angry like a lion* and *Happy like a butterfly* (*Kitten Story*). The atypical *metaphors* were used by JD and GG. The examples were both found in responses to *The Kitten Story*: Bill's sad and happy feelings are *in the middle* (JD Part 2) Bill's sad and angry feelings are *balanced* (GG Part 1).

It is acknowledged that there is no use of *metaphor* from typically developing children's data for *The Kitten Story* available for comparison with the language impaired children's data. However, the classification of JD and GG's *metaphors* as atypical relates to the way in which these *metaphors* conceptualised the language impaired children's neutralisation of the emotional content of feelings which is seen in both the language impaired children's responses to *The Puppy Story* and *The Kitten Story* and which is nowhere evidenced in the typically developing children's responses including those of the American children in Donaldson and Westerman's original study. This neutralisation of emotion is also atypical when compared to adult studies of metaphor. Further research looking at typically developing children's use of *metaphor* in response to *The Kitten Story* is however required to confirm the findings of this language disordered study.

In addition to the atypical and delayed use of *metaphor*, the majority (7 out of 9) of the language impaired children's *metaphors* (*Puppy + Kitten* interviews) related to single basic emotions or same valence emotions and not complex contradictory emotion as was the case with the typically developing children's data for *The Puppy Story*. (See Results). Only GG's use of *metaphor* in response to *The Puppy Story* was related to complex contradictory emotion. These were also the only examples of Spatial and Transformation *metaphors* in the language impaired children's data (both stories). Spatial *metaphors* had composed the majority of the language normal children's *metaphors* (both age groups). Transformation *metaphors* had been the third most common

metaphor used by the 7 – 8 year old language normal children and the fourth by the 10 – 11 year olds. (See Results).

It can thus be concluded that the children with impaired language used different types of *metaphors* and the emotional understanding they expressed was different to that of typically developing children. Their metaphors reflected either:

- a delay in language skills (ER's *metaphors* were all examples of very early metaphor development).
- a delay in psychological/emotional understanding (the majority of *metaphors* related to single basic emotions or same valence emotions. They did not relate to complex ambivalent emotion).
- atypical processing of emotion whereby the contradictory nature of ambivalent emotion is avoided rather than explored or expressed.

GG, who was the child with the least impaired language profile, was the only SLI subject whose use of *metaphor* in response to *The Puppy Story* was similar to that of the typically developing children.

Mental role play

The use of *mental role play* was strongly correlated with younger (7 – 8 years) language normal children's ability to understand emotional ambivalence and their theories about what causes emotions to change (emotional causality). The results obtained by the language impaired children most closely resembled those of these younger typically developing children, yet only one example of *mental role play* was noted in their data. This was by ER (C.A. 9 years 3 months) in his response to *The Puppy Story*. This lack of *mental role play* by the children with impaired language development may have been due to the small subject numbers. A larger cohort of language impaired subjects would be necessary to confirm the results. However, reasons why language impaired children may experience difficulties with *mental role play*, and the

resulting contribution to delayed emotional maturation, are now explored further.

The Discussion at the end of the second study (Chapter 3 page 289) outlined the early development of role play skills in language normal pre-school children and the link this may have with the emergence and development of empathy in later life. Empathy, it was stated by the philosopher Goldie (2000) requires an individual to *characterize* the self as a protagonist in an emotional narrative or story (page 290). *Mental role play*, it was then argued by this present researcher, represents a significant stage in children's ability to characterise the self: to put themselves in the position of another person in order to access his or her emotional state and predict their actions or behaviours. These skills are precisely those required by the interview questions for *The Puppy Story* and *The Kitten Story*.

The ability of children to characterise the self has, it was suggested, its foundation in pre-school role play skills where the children act out the emotion and behaviours characteristic of a range of different individuals in different scenarios using the appropriate language to maintain their characterisation. It was argued that younger children (7-8 years) still needed to inhabit the story from the point of view of the protagonist in order to answer emotionally complex questions on their feelings and behaviours. Hence the importance of *mental role play* where the typically developing subjects in this age range took on the character of the protagonist in the story. Older children (10 – 11 years) were not so dependent on this cognitive tool and could simply access the experience internally and then verbally report on it. It was hypothesised that children with impaired language who presented with difficulties in socialisation, pre-school play skills, and narrative development would find it difficult to develop the use of *mental role play* and as a consequence, their emotional understanding of themselves and others.

The results from the language impaired group of children with their low incidence of *mental role play* give support to this hypothesis. The surprising paucity of *mental role play* (one example only) in the SLI data, given its

resemblance to younger typically developing children's data which was significantly correlated with *mental role play*, may be a reflection of their impoverished early role play skills. All three of the language impaired children who had been referred pre-school (JD, AB and ER) experienced severe disruption of their early play skills and ability to relate to other children in these early years. This had been detailed in their clinical speech and language therapy case notes, supported by reports from professional such as Consultant Paediatricians, Clinical and Educational Psychologists, Pre-School Advisory Teachers and Nursery staff. (No professional pre-school information regarding socialisation and play was available for GG who wasn't referred until middle school).

The one language impaired child (ER) who did use *mental role play* did so in response to the question: *how would Mike show his angry feelings?* Although ER's expressive language difficulties were very evident in his use of *mental role play* he did attempt to express some idea of Pepper's sorrow and Mike's empathy with Pepper which leads to the restoration of their relationship even though the precise mechanism for this is very unclear:

R: And how else would Mike show his angry feelings?

ER: Angry feelings..um like (said to self)..... Ss'sad..because um..dog could cry and..and sa'..and dogs mi'..could dry (sic. phono.) and um..Mike said sorry to say that but I'm not allowed to say that and..oh....they will be friends. Mental role play (goes into role – tone of voice/intonation alters)

Reports of ER pre-school indicated a child who wanted to socialise and was able to observe and copy peers. With support at the Child Development Centre he developed *very good play skills and socialisation* (quoted from Consultant Paediatrician's report). Interviews with parent and class teacher showed that despite having the most impaired language, at the time he took part in the research study he was presenting as the most socially active of the four SLI subjects, seeking out and maintaining friendships with a range of

peers.

GG, who presented with the least impaired language profile, was the subject who after ER came closest to explicitly demonstrating direct empathy with the story protagonist. GG did not use *mental role play* in response to interview questions although at one point when he retold Part 2 of *The Kitten Story* he reported speech directly from the point of view of the story characters. This was at the precise moment in the story when the possibility of replacing the lost kitten was first mentioned (the cause of Bill's later ambivalent emotions):

*His Mum and Dad um..said **Do you want us to get you a new kitten?**
And he said **No it wouldn't be the same..without Snowball.** He
gave up hope. Fast.*

In addition GG was able, although with prompting from the researcher, to develop his use of *metaphor* in *The Puppy Story* to provide a brief allusion to what Goldie refers to as *in-his-shoes imagining* which Goldie believes is central to empathy:

*R: How would you know..that Mike still loved Pepper even though he
was angry at him?*

GG: 'Cos he would still have that feeling in his head.

METAPHOR

*R: He would have that feeling in his head. And how would **you** know
that he's got that feeling in his head?*

GG: ..Because you ima'..imagine it?

The connection of empathy with *metaphor* is an important one and provides a further reason as to why this particular group of SLI children may present with few examples of *mental role play*.

A number of researches have stressed the importance of syntax in our ability to understand emotions and use the language of emotion effectively.

Metaphor, researchers such as Kovecses say, is essential for the ability to conceptualise an emotion but a full understanding of the meaning of that emotion, either for ourselves or others, can only be realised within the context of a script or narrative for which the use of clauses and complex syntax is required. In a fully developed experience of empathy, the metaphoric and narrative aspects of emotional understanding and expression exist in partnership.

The importance of this script or narrative of emotion concepts is seen in the work of many researchers e.g. Fehr and Russell, 1984; Rosaldo, 1984; Kovecses, 1986, 1988, 1990; Lakoff and Kovecses, 1987; Shaver et al., 1987; Ortony, Clore, and Collins, 1988; Rime, Philippot, and Cisalomo, 1990; Wierzbicka, 1990, 1992; Heider, 1991; Palmer and Brown, 1998 etc. Lakoff and Kovecses (1987) for example describe *anger* as a sequence of stages of events: 1. cause of anger, 2. anger exists, 3. attempt at controlling anger, 4. loss of control over anger, 5. retribution. In other words *anger* is viewed and understood within a five-stage scenario or story. Fehr and Russell (1984) characterise *fear* in a similar manner using a scenario or story script. Kovecses' (2000) comment on this script:

..we have the unfolding of a variety of events that are temporally and casually related in certain specifiable ways.

echoes Goldie's (2000) definition of emotion:

..an emotion is structured in that it constitutes part of a narrative – roughly, an unfolding sequence of actions and events, thoughts and feelings – in which the emotion itself is embedded.

Both extracts stress the narrative context of emotion. It would be difficult to conceive of fully understanding an emotion without understanding the narrative in which it is experienced. *Mental role play*, by which young school

age children (7 – 8 years) re-create a small part of the narrative with themselves as the central protagonist, helps them to access the emotional experience and formulate the understanding required to answer the interview questions posed by this researcher. Adequate linguistic skills would be a necessary, although not sufficient requirement for this ability.

Three out of the four language impaired subjects (JD, AB and ER) had receptive and expressive difficulties with those language abilities required to develop good narrative skills. These related to receptive and expressive syntax (*Conjunctions & Transition Words* from the *TOWK* and *Formulating Sentences* from the *CELF*) as well as the ability to understand and retain information from short stories (*Listening to Paragraphs*, *CELF*). GG was the only subject to achieve standard scores and percentile ranks within the average range for his age for these subtests. As a group the subjects with impaired language would therefore be likely to present with difficulties accessing the narrative of *mental role play* required to develop their understanding of the emotional significance of the stories. This was as a result of both socialisation problems at a pre-school age affecting the development of social play, especially role play, and persisting linguistic impairments affecting current narrative skills.

In the SLI group ER was the only subject to use *mental role play*. On the *Teachers Report Form* ER presented with the lowest number of areas of concern and the only subject to have no concern reported regarding social interaction skills. (The discrepancy between the teacher's and parent's view of social interaction was referred to earlier pages 355 - 356). This may indicate the importance of the part played by socialisation and social play in the development and use of *mental role play*.

GG, who was able to demonstrate some emerging *mental role play* abilities when re-telling *The Kitten Story* and also an understanding of the imaginative role of empathy in accessing the thoughts, feelings and behaviours of others, demonstrated the best linguistic skills required for narrative. There was also no evidence that GG had experienced the extreme pre-school social

interaction difficulties associated with the three subjects who had attended Language Units. However at the time of the research, his teacher had noted his isolation from other children in the class and lack of awareness and interaction with peers suggesting difficulties with socialisation which might have inhibited the development of *mental role play* as a tool for thinking about the emotions of others. (See summary of interview Appendix 12).

Personal experience and folk psychology

The use of *personal experience*, or rather lack of it, by the children with impaired language has already been discussed (pages 450 - 451).

The typically developing children's use of *folk psychology* was small relative to other cognitive and linguistic tools and the numbers of recorded instances remained stable over time. Only one example of *folk psychology* was recorded for the language impaired subjects (AB in response to *The Puppy Story*).

Further research is required to see if children with impaired language have specific difficulties in the development of a folk model of how people feel and act.

Differences in when language impaired children used cognitive and linguistic devices relative to language normal children.

The results of the second study showed that typically developing children of both age groups used the greatest number of cognitive and linguistic devices in response to parts two and three of *The Puppy Story*. These represented the most emotionally complex parts of the story.

It is acknowledged that Part one of *The Puppy Story* had fewer interview questions than parts two and three and so it could be argued that there was simply less opportunity to use cognitive-linguistic devices. However the language normal data for *The Puppy Story* was compared to that of *The Twins Story*. This story was matched in terms of the number and complexity

of the questions asked but concerned linguistic ambiguity rather than emotional ambivalence. At 7 – 8 years of age there were more devices used for Part two of *The Twins Story* than Part one (there was no corresponding Part three). However, this difference was less pronounced than for *The Puppy Story* with more than double the devices used for Part one of *The Twins Story* than were used for Part one of *The Puppy Story*. At age 10 – 11 years more devices were used for Part one of *The Twins Story* than for Part two. In addition, the children used different devices for the different parts of the stories. This suggested that the number and type of cognitive-linguistic devices used by the typically developing children was not simply related to the number of questions asked but also the cognitive demands made by the different story parts. (See Chapter 3).

The results from the language impaired study showed that unlike the typically developing children the SLI children used the least number of devices for Part two of *The Puppy Story* which dealt with ambivalent emotion. The language impaired children used the greatest number of devices when answering questions on what causes emotions to change (Results, pages 407 - 409). If, as is hypothesised in the language normal study, the use of cognitive-linguistic devices relate to the cognitive demands of the interview questions, then the language impaired children present as similar to the typically developing children in their perceived complexity of emotional causality questions, but very different when the questions related to ambivalent emotion.

Examination of the responses and cognitive-linguistic devices used by the language impaired children indicated that it was not that the children found answering questions on emotional ambivalence undemanding, but rather that they denied, or do not recognise, the emotional confusion presented by ambivalence in the first place. JD's responses have already been discussed. Two more of the four SLI children responded in a way which failed to acknowledge the emotional ambiguity (AB and ER).

AB gave similar answers in response to *The Kitten Story*. He only referred to Bill's happy (*delightful*) feelings on receiving a new kitten and even when pushed by the researcher failed to co-ordinate any negative feelings, finally stating:

R: Um..if Bill thinks..about Snowball will he stay happy?

AB: Yeah. (definite) (nods head)

AB is also the only language impaired subject not to use any *metaphors* in his responses to either story. *Metaphors* were the most commonly used device in typically developing children's responses to emotional ambivalence (Chapter 3, Results pages 225 and 231) and allowed them a way of developing their thinking and conceptualising their understanding of contradictory feelings (see earlier, *Metaphors*). For children in transition between Level 2 and Level 3 thinking the metaphors allowed a way of internalising the two opposing feelings without being overwhelmed by the resulting confusion by keeping them separate spatially within the same body (e.g. *one side of his heart was angry and the other was loving*). The extract from AB's transcript quoted above shows that his thinking has not yet developed to the level of acknowledging the simultaneous experience of contradictory emotions. He therefore has no necessity to use metaphor to conceptualise and make safe the tensions which would result from such thinking.

ER, who presented with the most impaired language profile, re-told parts two of both *The Puppy Story* and *The Kitten Story* altering the events to specifically omit the emotional ambivalence. No other language impaired subject or language normal subject taking part in this research did this. In Donaldson and Westerman's scoring manual such behaviours were associated with the youngest (4 - 5 year old) least emotionally mature children (Appendix 3 page 596). Only GG, who presented with the least impaired language profile, came close to the responses of the typically developing children when resolving ambivalent emotions. In *The Puppy Story* he was able to use the same types of *metaphor* as used by the language normal

children to describe the story protagonist's complex and contradictory feelings, both in part two and part three of the story.

In conclusion, the typically developing children used cognitive-linguistic devices most when answering cognitively demanding questions regarding their understanding of the story protagonist's complex feelings, both emotional ambivalence and emotional causality. In comparison, (*The Puppy Story*) language impaired children used most devices when answering questions on emotional causality but fewest for emotional ambivalence. It is argued that the language impaired children present as delayed, but following typically developing children's understanding of what causes emotions to change, but with delayed and atypical responses to emotional ambivalence. This suggests that the contradictory nature of these feeling states posed a particular problem for these children with specific language impairment.

Even when the language impaired children were able to acknowledge the presence of two opposing emotions they were unable to make sense of the contradiction this created. While this was the same for young (7 – 8 years) language normal children who presented with contradictions in their responses to interview questions, these children were then able, when pushed, to use devices such as *mental role play* (to access empathy) and *metaphor* to begin to address and re-conceptualise their understanding of the inherent ambivalence of these feelings. This was not seen in the data of the language impaired children. Either like AB, understanding followed a typical path but much delayed and below the level at which contradiction is acknowledged, or like JD and ER they eventually acknowledged the opposing feelings but sought to deny, rather than resolve, the emotional contradictions they generated.

There may be a further reason for these language impaired children's specific problems with ambivalent emotion, in addition to their difficulty with using cognitive-linguistic devices. The language impaired children most closely resembled the 7 – 8 year old language normal children in terms of their emotional understanding scores (levels). These typically developing children

at age 7 – 8 years are in transition between seeing feelings as tied to the events which give rise to them and understanding that they are related to enduring qualities and an on-going relationship. They vacillate between both explanations and attempt to keep contradictory emotions distinct by separating them using such techniques as spatial metaphors. Such vacillation is likely to cause syntactic revisions and mazes as well as occasional incoherent utterances as they attempt to express their psychological and cognitive uncertainty.

This was found to be the case with Discourse analysis showing that the majority of errors were in the Manner category. These types of errors occur at sentence level and include linguistic non-fluency (repetitions, unusual pauses, and hesitations), revisions (false starts, interruptions and mazes), delays before responding (related to processing/formulation difficulties) and gaze inefficiency when eye contact is lost related to expressive language difficulties). In addition, the majority of these children's expressive language performance errors were in the syntactic category, as opposed to Lexical, Phonological or Semantic (see Results, Chapter 3).

Syntax, it is argued plays an important role in the typically developing children's ability to express contradiction, especially the development of adversative conjunctions such as *but*, *although*, *however*. Causal conjunctions such as *because*, *if*, would be important for making links between emotions and events, including people's behaviours and reactions. Temporal conjunctions such as *when*, *before*, would be necessary to follow the time course or narrative of a particular feeling.

As a group, the language impaired children's greatest areas of weakness were in receptive and expressive syntactic development and especially the development of conjunctions, including adversative conjunctions, as assessed by the *Formulating Sentences* subtest of the *CELF*. Only GG, whose responses most closely resembled those of typically developing children, presented with age appropriate receptive and expressive syntactic development. It is therefore extremely unlikely that JD, AB and ER would

have had the linguistic skills to understand and express the contradictions inherent in opposing emotions. However, what is surprising is the way in which the language impaired children, including GG, sort to take away the emotional content of the feeling, even single basic feelings. Emotional states were described as *normal*, *OK*, *balanced* in direct contrast to how they are experienced. This had not been observed in any of the language normal data.

The language impaired children's data was not subject to Discourse analysis. However, this data did present as easier to transcribe since unlike the 7 – 8 year old typically developing children's transcripts it contained fewer incoherent or unintelligible utterances or examples of sentence rehearsals or mazes affecting intelligibility (and which had been recorded through Discourse analysis of the language normal data under the Relations and Manner categories).

The children with impaired language, whether consciously or unconsciously, preserved the syntactic skills they did have by then not acknowledging the contradictions present in their explanatory model of ambivalent emotion. They did not attempt to revise their explanations to take account of the emotional contradictions and confusions and for which they would have needed complex syntactic structures, and which was so demanding of typically developing children's expressive language. Further research is required to investigate if this is due to psychology (the children are aware but unable or unwilling to tolerate the necessary syntactic breakdown) or linguistic (the children do not have sufficiently developed syntactic skills to be aware of the contradictions and therefore the need to restructure their thinking about emotional ambivalence) or a combination of both.

Results from the language normal study had shown no difference in the older (10 – 11 years) boys' and girls' ability to understand ambivalent emotion. However there were differences in their ability to articulate this understanding. The girl's expressive performance errors (predominantly syntactic) decreased with age and their use of *metaphor* became dominant when talking about

ambivalent emotion. In contrast the boys' expressive performance errors (also predominantly syntactic) substantially increased with age while their use of cognitive-linguistic devices remained split between the earlier significant *mental role play* and *metaphor*.

This suggests that *metaphor* is a useful tool for thinking and talking about ambivalent emotion once the child becomes aware of its inherent contradiction or paradox. The language impaired boys would therefore be doubly disadvantaged. They did not have the complex syntax of the normally developing 7 – 8 year old children to begin to think about and make sense of the contradictions inherent in ambivalent emotions. Nor did they have, either as boys or as language impaired children, the skills necessary to develop their metaphoric expression of these contradictions. This would help explain why, unlike the language normal children, the language impaired children used the least number of cognitive-linguistic devices when talking about emotional ambivalence (*The Puppy Story*): the contradiction and inherent paradox of opposing emotion was not detected or acknowledged due to poor syntactic development and therefore did not require metaphoric expression.

In *The Kitten Story*, the language impaired children used the greatest number of cognitive-linguistic devices when answering questions relating to Part one (same valence emotions). An equally small number of devices were used when answering questions relating to parts two (emotional ambivalence) and three (emotional causality). This does represent a difference to the typically developing children's use of cognitive-linguistic devices for *The Puppy Story* where they used the most devices for parts two *and* part three. However, it is difficult to comment on this difference since there is no language normal data to make comparison with. The difference may represent differences between the two stories. This is explored further at the end of this Discussion (section 5).

The use of the greatest number of cognitive-linguistic devices in response to part one of *The Kitten Story* can however be linked to the cognitive demands of this part of the story. All of the children with impaired language, except JD,

experienced considerable difficulties answering the Part one questions relating to same valence emotions. The use of the cognitive-linguistic devises, it is argued, reflected these difficulties.

Summary

Children's understanding of ambivalent emotion makes demands on the following areas of development:

1. Empathy. Specifically the increasing ability to access and reflect on a character's emotions from that character's point of view. This process starts in early childhood and is intimately connected with language development (see Harris, 1989 for an overview). An important stage in preschool children's understanding of empathy is role play and the development of the language necessary for successful social play. This ability to role play the narrative of an emotion from another's perspective continues to be important in adults' emotional understanding (Goldie, 2000) but is gradually internalised. The use of *mental role play* identified in this research study represents a stage in this internalisation. Empathy and *mental role play* would be important for all aspects of emotional understanding and not specifically emotional ambivalence.
2. Syntax. The development of children's complex syntax, especially clauses and complex conjunctions (causal and adversative), allows them greater access to the narrative of a specific emotion as well as the ability to express the contradictions and confusions inherent in ambivalent emotion: *X loves Y **but** also hates him; X is happy with his new kitten **although** he is also sad at the loss of Snowball*. It allows the child to re-structure his/her explanatory model to accommodate the contradictions of emotional ambivalence as outlined by Donaldson and Westerman. The development of causal conjunctions (e.g. *because*)

would be important for understanding the narrative of an emotion which links events and actions over time and in structuring *mental role play*. Adversative conjunctions would be specifically necessary for understanding and expressing the contradictions and paradox of ambivalent emotion.

3. Figurative language. The development of figurative language, including metaphor, allows children to re-conceptualise their understanding of emotions from seeing them as tied to the events that gave rise to them and understanding that they are related to enduring qualities and an on-going relationship. As the child's conceptual and semantic understanding increases metaphors develop from comparing physical attributes towards more abstract psychological comparisons. Children, especially at the transition age of 7 – 8 years begin to conceptualise the human body as a container which is able to accommodate more than one, and eventually even opposing, emotions at the same time. This view of emotion (anger) is consistent with cross cultural studies of adults' emotional processing. In Psychotherapy, metaphor has a long tradition of being identified with developing new ways of thinking about feelings (Langer, 1948). It is especially linked with those areas of emotional thought which deal with apparent violations of logic where *Something cannot be itself and not-itself at the same time* (Siegelman: *Metaphor and Meaning in Psychotherapy*, 1990 page 10). Thus metaphor would be especially useful for expressing contradictory emotion. This is supported by the typically developing children's primary use of conceptual *metaphor* for answering questions relating to ambivalent emotions.

All three of the above areas are necessary for the normal development of children's emotional maturation. The language impaired subjects in this third research study had varying degrees of difficulties in all of the above domains. These included difficulties in early social and imaginative role play as well strengths and weaknesses in figurative language and semantic, conceptual and syntactic development. The variations in their language profiles have

been discussed in terms of the delayed and atypical responses in their understanding and resolution of complex emotions and which have their foundations in the above three areas of development. That emotional development per se is difficult for children with impaired language is evidenced by their delayed responses. That the understanding of emotional *ambivalence* is particularly difficult for children with impaired language is evidenced by their atypical responses.

The individual responses of the language impaired children are now explored in more detail and compared with those of the typically developing children. Differences are related to the children's linguistic strengths and weaknesses as shown by their language profiles. In addition, the language impaired children's performances on the interview questions are placed in the wider context of their current social and emotional functioning at the time of the research, as evidenced by information obtained from home and school.

For ease of reference each child's language profile is reproduced at the beginning of the relevant section. Initials and numbers in brackets refer to the supporting quotation taken from the subject's transcribed interview and reproduced in Appendix 11.

3. A discussion of the SLI subjects' experimental results in relation to their individual language profiles and their social and emotional development at the time of the research procedures (as reported by parents and teachers).

Subject: JD

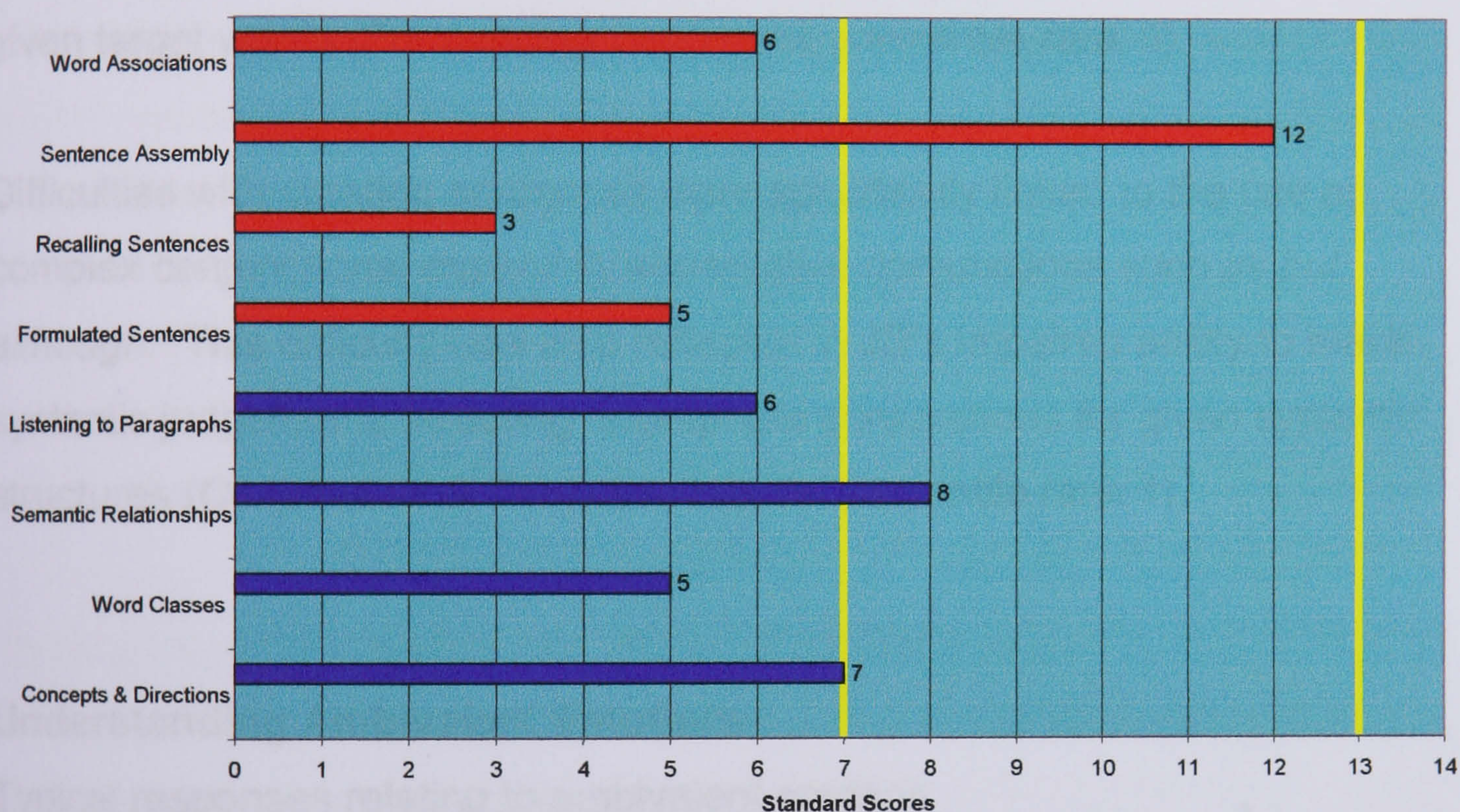
Chronological Age: 13 years 2 months

Bar Charts 1-2: CELF and TOWK subtest standard scores for subject JD

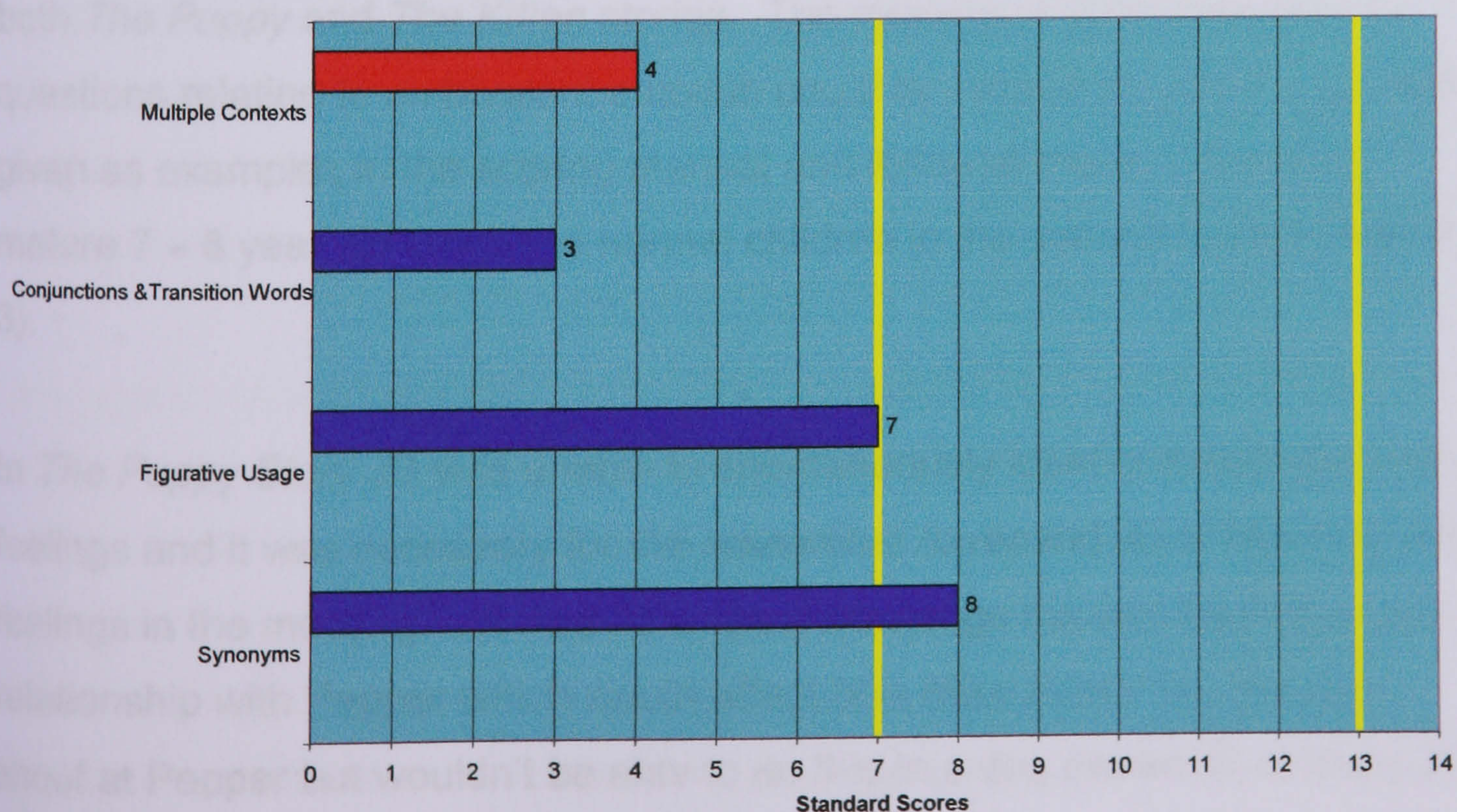
Expressive subtests are in red and receptive subtests are in blue.

Lines in yellow indicate the average range for standard scores (7 – 13).

Bar Chart 1 showing CELF subtest standard scores for subject JD aged 13 years 2 months



Bar Chart 2 showing TOWK subtest standard scores for subject JD aged 13 years 2 months



Language Profile

At chronological age 13 years 2 months JD was the eldest language impaired subject to take part in the research. However his Total Language Score was the lowest for the four language impaired subjects (percentile rank 4).

JD presented with strengths in understanding figurative language, synonyms, conceptual knowledge and semantic relationships. There was a significant discrepancy between JD's ability to manipulate given syntactic structures into grammatically acceptable and semantically meaningful sentences (*Sentence Assembly*: percentile rank 75) and his ability to create his own sentences from given target words (*Formulating Sentences*: percentile rank 5).

Difficulties with creating sentences were specifically linked to the use of complex conjunctions, especially adversative conjunctions such as *but*, *although*. This difficulty was also reflected in JD's impaired ability to make syntactic judgements selecting appropriate conjunctions for given syntactic structures (*Conjunction & Transition Words*: percentile rank 1).

Understanding Ambivalent Emotions

Typical responses relating to ambivalent emotion

JD obtained Level 1 scores for his understanding of ambivalent emotion for both *The Puppy* and *The Kitten* stories. The majority of JD's responses to questions relating to ambivalent emotion could be related to typical responses given as examples in the scoring manual and followed those of the least mature 7 – 8 year old language normal children in the second study (Chapter 3).

In *The Puppy Story* JD was unable to spontaneously identify loving and angry feelings and it was necessary for the researcher to remind JD of Mike's loving feelings in the morning. JD was able to acknowledge the fact that Mike had a relationship with Pepper which would affect how Mike *treats* him (he can shout at Pepper but wouldn't be able to do this to a dog owned by somebody else) but not how Mike *feels* about Pepper (JD1). JD expressed no

awareness that Mike's feelings for his dog would influence how he behaves. (For example Mike may be less angry with the neighbour's dog because it is not *his* dog and so he does not have the feelings of hurt and disappointment, or he may be less angry because the love he has for Pepper mixes with and ameliorates his negative feelings over the wrecked plane). In addition, JD made it clear that the return of Mike's love was dependent on Pepper doing something good, specifically finding a second ball that Mike had lost; a repeat of the scenario given in the first part of *The Puppy Story* (JD2). All these responses are characteristic of language normal children's Level 1 thinking.

JD's interview for *The Kitten Story* showed a similar pattern of delayed but typical responses in regard to ambivalent emotions as was found in *The Puppy Story*. In many respects JD was able to present a more advanced and coherent level of understanding in *The Kitten Story* with a number of responses indicative of emergent Level 2 thinking. This may have been due to the use of picture supports. JD concentrated well on the pictures presented and used them effectively to support his answers to the interview questions.

Atypical responses relating to ambivalent emotion

For both *The Puppy Story* and *The Kitten Story*, it was the point at which JD had to resolve and conceptualise how contradictory feelings are internalised that his atypical thinking, relative to language normal children, became apparent. In *The Puppy Story*, when pushed by the probe questions, JD was able to acknowledge that Mike feels differently towards Pepper at different times so he can feel both love and anger towards the dog. However, these feelings are bound to the events which give rise to them and separate in time.

Like typically developing children whose understanding of ambivalent emotion is still emerging (Levels 1 to 2) JD struggled to explain how these contradictory emotions are experienced. Like typically developing children he separated them in time using causal, additive and temporal conjunctions. His cognitive struggle was reflected in his linguistic struggles as was seen in the language normal data presented in Chapter 3. However, what was very different about JD's data was the way in which he suddenly resolved this

struggle: *so it could be..um..the same really....Could be like normal* (JD3). JD denied or neutralised the emotional effect of contradictory feelings. They became *the same really* and *normal*. This way of processing ambivalent emotion is clearly counter to experience. Opposing feelings are confusing and distressful. This can be known through personal experience as well as observation of others' behaviours and actions. JD like a typical Level 1 child understood opposing emotions in a temporal sequence but then when pushed by the probe questions went on and atypically denied the emotional experience of contradiction.

JD made a very similar response in *The Kitten Story*. Initially, like children at the more mature Level 2 stage JD was able to spontaneously identify both contradictory emotions (sad and happy). JD clearly understood that Bill would feel both sad and happy on receiving his new kitten (JD4). However, JD conceptualised Bill's resulting internal state in a very unusual way by saying he would feel *OK*. This is after JD had looked at the facial expression cards which showed *confused* as an option. JD's vocal intonation pattern and stress on *OK* was also unusual and deliberate. The word was said slowly so it was lengthen and with a flattened intonation. The effect was to identify to the listener that JD's meaning was different to what is normally meant by the word *OK* (fine/happy). JD repeated this vocal pattern whenever he used the word *OK* in response to ambivalent emotions. Instead the meaning appeared to be that the two opposing feelings had cancelled each other out resulting in an emotional balance/blandness. This was emphasised by JD's use of the metaphor *in the middle*. This meaning was also reinforced later when JD was asked how you could tell if Bill was feeling happy and sad:

JD: Like could be like OK and look like a face like that. (picks up and holds up picture of OK face to show R.)

The picture supports used for *The Kitten Story* did appear to support JD's impaired language skills. He was able to spontaneously identify the opposing feelings *sad/happy* without any prompting from the researcher and used adversative as well as additive, causal and temporal conjunctions to explain

Bill's feelings (JD4). However, despite this improved explanatory model JD still denied the effect of contradiction on emotional experience (confusion and distress). In the same way as Mike experienced loving and angry feelings as *the same* or *normal*, Bill is described as feeling neutral (OK).

Typically developing children who are unable to understand the confusions of contradictory feelings attempt to circumvent the need for resolving opposing emotions by keeping them separated in the body and may use spatial *metaphors* to do so (see earlier). For JD the difficulty is at a different level of thinking about emotions. Unlike the typically developing children who seek to keep warring emotions separate, JD was unable to acknowledge that the emotions were warring (oppositional) in the first place. He indicated through gesture that the kittens inhabited two separate external spaces rather than separate internally Bill's different feelings for the cats (conjunctions highlighted in red):

R: How do you think Bill feels about the new kitten?

JD: (looks at facial expression cards & then, towards the end of the utterance, looks at the story picture cards) Um..he could be..OK with it because he still got feelings for..Snowball..um but he's..but he's can't like con'..like compare 'em for each one. (struggle) (very brief gesture with hands as if indicating 2 kittens in two different spaces)

Like typically developing children JD was able to use his stronger language skills (semantic, conceptual and figurative) to create a *metaphor* which conceptualised the understanding of contradictory emotion put forward in his explanatory model. However, the metaphor *in the middle*, together with his description of Bill looking and feeling OK has the sense of equilibrium and balance rather than keeping separate opposing forces. JD appeared unable to apply contradiction to emotional experience and his *metaphor* did not follow the expected language normal child and adult model of seeing the body as a container for turbulent emotions which somehow have to be dealt with.

It is argued that JD's difficulty in applying contradiction to emotional experience may reside in his linguistic difficulties with syntax and specifically adversative conjunctions. On formal language assessment (*Formulated Sentences*) JD had been found to have specific difficulties with the expressive use of adversative conjunctions as well as receptive difficulties with a wide range of other conjunctions (*Conjunction and Transition Words*). The second study showed that typically developing children found it easier to detect and resolve linguistic ambiguity than emotional ambiguity and with fewer expressive language errors. Emotional ambiguity was cognitively and psychologically demanding and placed more stress on children's expressive syntactic skills than linguistic ambiguity.

It is hypothesised that typically developing children would require a secure understanding of contradiction for non-emotional tasks before it could be applied to understanding complex abstract psychological states. Even once this receptive understanding of contradiction had been applied to emotions, the expression of the experience of emotional contradiction would be taxing of children's linguistic abilities. Evidence for this can be found in the language normal data. For example LD, a typically developing 11 year old boy, like JD, had to be reminded of Mike's loving feelings towards Pepper from the morning but was then able to express Mike's emotional ambivalence (using the adversative conjunction *but*):

LD: Yeah. I..I..I..think he still does (love him) but it's just that he gets annoyed with him sometimes.

LD was then pushed to explain more about how these contradictory emotions worked:

LD: Well y'.. (sigh) ... (silent articulation away from the camera) / dunno..I can't really explain.

R: Yeah. Don't worry.

*LD: ..I know it..**but** I can't explain it.*

R: I know its hard..

{LD: Yeah.

R: ..its hard to talk about these things. Why should Mike still love Pepper after he wrecked..his plane?

LD: ..'Cos it's his pet and he's..he's loved it since he's got it so he can't (□) ..just 'cos he does one thing wrong..he can't..not love somebody..can you?

LD was able to articulate very well (using the adversative conjunction *but*) the difficulties in expressing in language what he knows empathetically, specifically the confusion of contradictory feelings. However he did persist and was then able to begin to form, using a range of conjunctions, some kind of explanatory model of ambivalent emotion which does encompass Mike's emotional experience of contradictory emotion. (Older girls by comparison tended to articulate this explanation with little hesitation and linguistic breakdown using *metaphor* to express the complexity of their thinking about these emotions).

In contrast to LD, JD was able, with the picture supports to use complex conjunctions, including adversative connectives to express Bill's emotional *situation* but not his emotional *experience* of contradictory feelings. When explicitly prompted by the researcher JD could identify Mike/Bill's confusion. However, he did not reflect on and apply an understanding of contradiction at any theoretical level when constructing his explanatory model of ambivalent feelings which took account of the emotional content of the experience.

The ability to apply knowledge of contradiction to abstract psychological states in order to understand how ambivalent feelings are experienced and affect behaviour would, it is argued require meta-syntactic skills related to

adversative conjunctions and meta-cognitive skills related to the development of empathy (Goldie's *in-his-shoes imagining*). Both skills are missing from JD's language profile and interview responses.

JD demonstrated poor linguistic skills in reflecting on a given conjunction and creating an appropriate sentence structure (expressive subtest percentile rank 5) and in reflecting on a sentence structure and selecting an appropriate conjunction (receptive subtest percentile rank 1). His interview responses contained none of the devices which might indicate developing meta-cognitive skills relating to empathy and found in the typically developing children's transcripts: *mental role play*, *folk psychology* and *personal experience*. JD continued to maintain to the very end of *The Kitten Story* interview, and in relation to his self, that the ambivalent emotions would feel OK (JD5). This neutralisation of the emotional experience of feelings was consistent with a child who was unable to fully experience emotion from the story protagonist's perspective (hence JD's lack of *mental role play*) and also unable to acknowledge the contradiction of ambivalent emotions (hence JD's absent or atypical use of *metaphor*).

Causal theories of emotions

Overall, JD's responses to questions relating to emotional causality in *The Puppy Story* were scored at a Level 2. While there are still thinking processes strongly associated with earlier Level 1 thinking he was able to demonstrate the beginning of self awareness that feelings are not solely responses to provocative events but are also part of internal processes which the individual can choose ways of responding to. However, this was still very much in the early stages of Level 2 thought processes and JD showed no awareness that it was possible to think oneself out of a negative feeling. Given his age (13 years 2 months) this represented a considerable immaturity in JD's emotional cognition. However, the thought processes JD did display in his responses are what would be expected of a younger and/or less mature language normal child. There was no evidence within his data of alternate or atypical ways of perceiving the change in feeling states.

JD obtained a lower Level 1 for his understanding of what causes emotions to change in *The Kitten Story*. Unlike *The Puppy Story*, JD's responses to *The Kitten Story* indicated little awareness that it was possible to have control over changing feeling states. JD was unable to think of any ways in which children in general could make their sad feeling go away. JD acknowledged that seeing another cat could bring back Bill's sad feelings but they are not linked explicitly to memories of Snowball and Bill is seen as passively responding to external events. There was no sense, however limited, that Bill could exert any control over his feelings or that feelings were linked to memories and thoughts which could be directed (JD6). JD was therefore scored conservatively at Level 1. JD's responses were however, like those for *The Puppy Story*, consistent with a typically developing child at Level 1 with no indication of any atypical or unusual conceptualisation of what causes feelings to change.

The language skills required for Level 1 and Level 2 understanding of emotional causality would require only additive and temporal conjunctions and early developing casual conjunctions (*and, and then, because*). At this Level JD is only required to see feelings as linked to causal events in a simple *and then* sequence. Mike/Bill is loving/happy *and then* angry/unhappy *because* of events (a broken toy/a lost cat). His language skills, as measured by formal assessment, would be sufficient for the understanding and expression of these ideas without stress as is evidenced by the responses in his transcripts.

Social and emotional development and research findings

The findings obtained from JD's responses to the research stories were consistent with the information obtained from case notes, home and school. As a pre-school child JD had experienced severe difficulties developing play skills and presented with poor social integration. At primary school (7 years+) JD was still said to have poor imagination and to exhibit behavioural difficulties if unsupported by an adult. This lack of early social and imaginative play may account for the absence of *mental role play* as a device

to access the thoughts, emotions and actions of others and JD's difficulties expressing the emotional content of feelings.

JD presented with a considerable delay in his ability to understand emotional ambivalence and theories about what makes feelings change. Both home (mother) and school (Teaching Assistant and SENCo) expressed high levels of concern regarding JD's social and emotional immaturity. JD's mother placed his emotional age at around 8 – 9 years. This accurately fits the emotional profile elicited by the research of a child who is able to understand same valence emotions (established by 9 years of age in typically developing children) but not yet able to fully understand contradictory emotions (established by 10 - 11 years of age).

JD's Teaching Assistant described JD as jealous of another child she worked with. JD would antagonise this child but then seem unable to understand the role he played in provoking the child. JD also became angry and aggressive towards the Teaching Assistant whom he had worked with since primary school. The Teaching Assistant noted that JD was always very apologetic following his outbursts of anger.

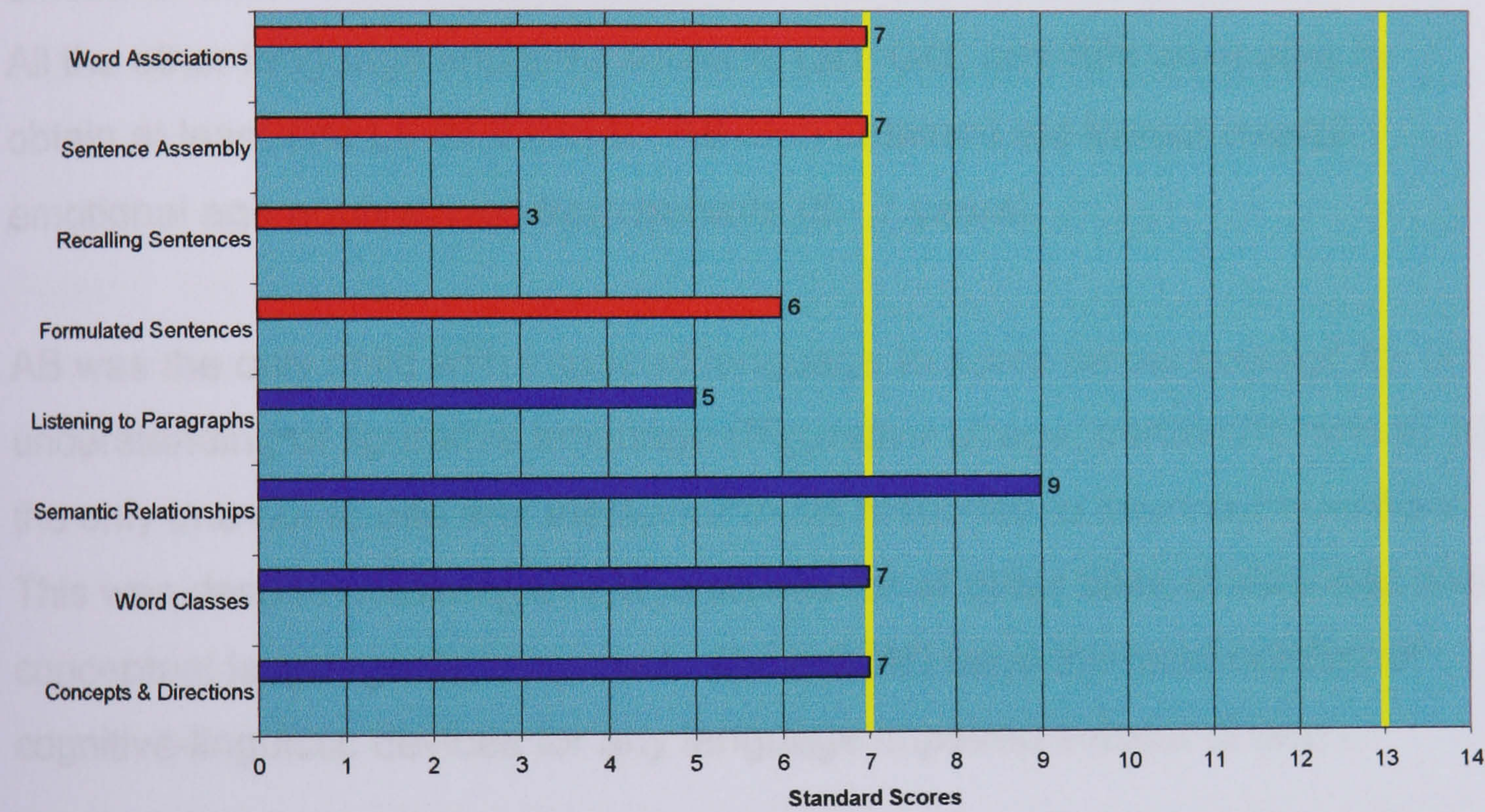
JD's behaviour was consistent with a child who is experiencing difficulties understanding the narrative of emotions and seeing himself as a protagonist in that narrative. This would also be consistent with JD's lack of *mental role play*. His behaviour towards his Teaching Assistant would be consistent with his inability to resolve contradictory emotions. The Teaching Assistant was in a long standing *in loco parentis* relationship with JD which would trigger both positive (her supporting role) and negative (her disciplinary role) emotions in JD provoking behaviour which he would be unable to understand and resolve.

Subject: AB
Chronological Age: 11 years 9 months

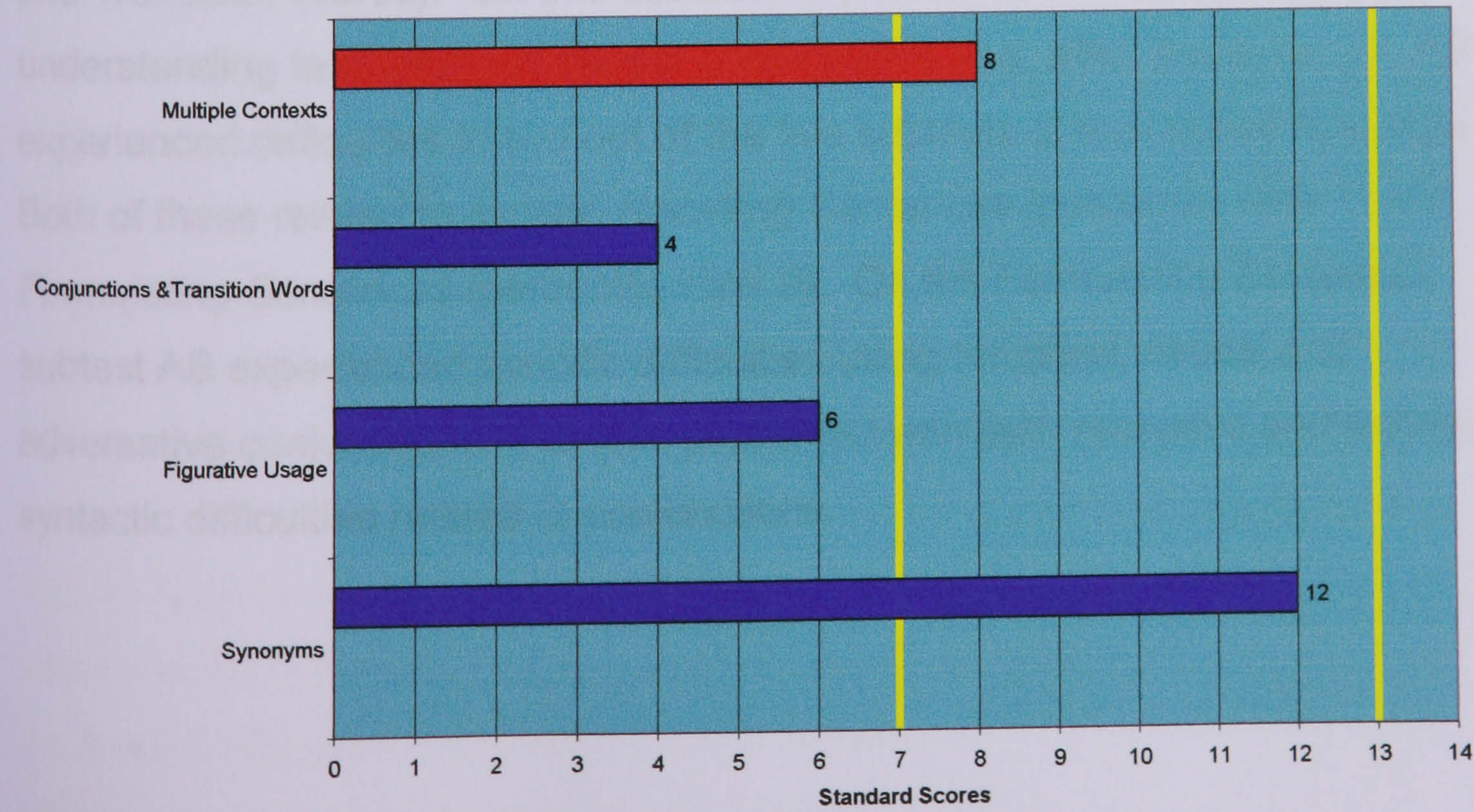
Bar Charts 3-4: CELF and TOWK subtest standard scores for subject AB

Expressive subtests are in red and receptive subtests are in blue.
Lines in yellow indicate the average range for standard scores (7 – 13).

Bar Chart 3 showing CELF subtest standard scores for subject AB aged 11 years 9 months



Bar Chart 4 showing TOWK subtest standard scores for subject AB aged 11 years 9 months



Language Profile

AB was the second eldest of the language impaired children (11 years 9 months). He obtained the highest percentile rank out of the 4 subjects for his receptive language with a percentile rank of 16 (low average), but the lowest percentile rank for any subject for his expressive language (3).

AB presented as the most delayed language impaired subject in his overall ability to understand complex emotions (both stories). He was the only language impaired subject to obtain Level 1 for both his ability to understand emotional ambivalence and what causes emotions to change (both stories). All the other language impaired subjects (JD, GG, and ER) were able to obtain at least one Level 2 score. AB also obtained the lowest overall emotional age equivalence from parents (6 - 7 years).

AB was the only child with impaired language to score below average for his understanding of figurative language (*Figurative Usage*: percentile rank 9) and the only one not to use any *metaphor* in his response to interview questions. This was despite obtaining average scores for all other tests of semantic and conceptual language development. Overall, AB used the least number of cognitive-linguistic devices for any language impaired subject (2 only).

AB's lowest receptive score (percentile rank 2) was for syntax (*Conjunctions and Transition Words*). On this subtest AB presented with specific difficulties understanding temporal and causal conjunctions (e.g. *after*; *because*, *if*). AB experienced difficulties in two out of the five subtests of expressive language. Both of these related to syntax: *Recalling Sentences* (percentile rank 1) and *Formulating Sentences* (percentile rank 9). On the *Formulating Sentences* subtest AB experienced specific difficulties using temporal, causal and adversative conjunctions. AB thus presented with both receptive and express syntactic difficulties related to conjunctions.

Understanding Ambivalent Emotions

AB's responses to the structured interviews were the most emotionally immature of all 4 of the language impaired children. AB presented as a boy who had only just made the transfer from Level 0 thinking to Level 1. For both *The Puppy Story* and *The Kitten Story* AB's replies to questions revealed continuing difficulties in co-ordinating contrasting feelings even at a rudimentary level. However, unlike the other 3 SLI subjects who also experienced difficulties with contradictory emotions, AB also experienced difficulties describing even single basic emotions.

Difficulties describing single basic emotions

In *The Puppy Story*, although AB readily identified Mike as feeling *Happy* in Part One, he experienced difficulty identifying Mike's feelings towards his dog Pepper. AB first stated that the feelings Mike had for Pepper were *Nice* and then when pushed by the researcher *Grateful*. (AB had linked *Happy* with Pepper finding Mike's ball and it is therefore likely that *Grateful* also related to this event). Although AB agreed when the researcher explicitly asked if Mike loved Pepper, AB had been unable to articulate this for himself. Having agreed that Mike loved Pepper AB was then unable to think of any ways in which Mike would show his loving feelings (*..Uh...Can't think*) or how he would act towards Pepper (*Uh..uh.....I don't know*). When asked how Mike would look at Pepper he replied *normal*. (AB1).

The data from the youngest typically developing subjects (4 – 5 years of age) is limited as they were only seen for the replication study (Chapter 2). Four children were seen, two boys and two girls, three of whom were four years of age and one who was five years old. However, comparison with their data shows similarities and differences with AB in their abilities to describe single basic emotions.

The 4 - 5 year old children did experience difficulties with responding to the *show* and *act* questions. (*How would M. show loving feelings; how would M act towards Pepper*). However, while there were a number of no responses there were also a reasonable range of suggestions for the loving feeling:

cuddle, play with, and take for a walk. The children were also able to describe a loving face using simple vocabulary: *happy face, smiley face.* More difficulties were experienced by these young children for the emotions angry and sad (*Puppy Story* and *Kitten Story*) but the children did offer suggestions such as *smacking, having a cross face,* and were also able to mime a sad face or simply state that the story protagonist would have a sad face.

AB's responses when asked to describe loving feelings are thus more typical of 4 – 5 year old children except for his comment that a loving face would look *normal.* None of the 4 – 5 year old children or any of the other 40 children seen as part of the replication and language normal study described the experience or expression of an emotion as *normal* – all were able to give some appropriate indication of the emotion's salient features.

Interestingly one of the language normal children (a 7 year old boy in the replication study) did refer to Mike as feeling "normal" in Part two of *The Puppy Story.* (See Chapter 2, pages 97 - 99). However, this was not a spontaneous comment but in response to a question by the researcher where *normal* was given as an option. This question was not part of the structured interview but used as a prompt by the researcher to help clarify the child's thinking. This boy was confused by the temporal framework of the story; the only typically developing subject to present with such a confusion. Once this confusion had been clarified the boy correctly identified Mike's feelings and experienced no further problems. Further research is required to explore if difficulties with the temporal structure of the story narrative is specifically implicated in SLI children's difficulties ascribing emotional states and their consequent use of un-emotive terms such as *normal, OK.* (There is some suggestion that the use of picture supports for *The Kitten Story* may have helped AB maintain his understanding of the time course of the story and develop his thinking, although this development is marginal. See page 494: *Use of picture supports*).

AB's difficulties in describing the basic emotion *love* is perhaps surprising given the considerable support and intervention he had received over a

number of years in developing emotional vocabulary and social skills. Given his chronological age (11 years 9 months) it also represents a considerable delay in AB's emotional maturity when compared with typically developing children.

Difficulties developing an internal narrative perspective

In regard to ambivalent feelings, AB's responses were consistent with typically developing children's early, less evolved models of thinking. Like these language normal children, AB viewed the narrative of the story consistently from an external perspective. Feelings were bound to the events which gave rise to them. Like young 4 – 5 year old children, or those at the earliest stage of emotional development, AB was adamant that the return of Mike's loving feelings were entirely dependent on the dog doing something nice for Mike (AB2).

With prompting, AB was able to state that Mike could feel love and anger but these feelings existed in isolation and were related to separate aspects of Pepper's behaviour *Uh..bec'..because if he..if Pepper did a'..Papper did anything nice..that it* (the loving feelings) *'ud come back but if it was..didn't it* (the loving feelings) *'ud go away*. AB conceived of the emotions as separate in time and space. Love and anger would be experienced *First one then the other* and *Stay separate*. AB used causal and adversative conjunctions (*because, if, but*) to link feelings externally to the dog's actions. They were not applied to Mike's internal feeling states.

AB's understanding of ambivalent emotions in *The Kitten Story* also showed evidence of both Level 0 and Level 1 thinking and he maintained his external perspective towards the narrative events. AB was able to identify happy feelings associated with Bill being given a new kitten (the event) but was unable to spontaneously co-ordinate Bill's internal and on-going negative feelings associated with the loss of Snowball (contradictory emotions). When further prompted AB was only able to suggest *grateful* as a feeling and which was linked to the parent's gift of the new kitten: *that they went to the pet shop to get a new kitten for him* (event).

When AB was specifically prompted to consider internal influences on feelings (memories and thoughts) he agreed that Bill would remember Snowball when he saw the new kitten but then maintained that Bill would remain happy (AB3). Bill does remember Snowball when he sees the new kitten but what he remembers are the external events linked to Snowball (losing the kitten, trying to find him) not any continuing internal feelings relating to Snowball. This is reinforced later when AB is further prompted by the researcher and somewhat grudgingly, admitted that Bill might feel some sad feelings alongside his happy ones *When he didn't find it* (Snowball). AB linked Bill's sadness to the futility of his search for Snowball (an event in the story) rather than any internal grief at the loss of the cat itself and that Bill is missing that *particular* cat.

However, AB was able to give some indication of co-ordinating the opposing feelings sad and happy and which was consistent with Level 1 thinking. This was when AB was specifically asked to explain how feeling sad and happy would work: *Uh..that..that he..his new tit.. (sic phono) kitten he takes him everywhere but he'll..that..he'll still think about Snowball when he lost him.* AB was able to use an adversative conjunction (*but*) which co-ordinates the contradictory feelings. However, there is still some sense that the sadness is linked to the time/event when Snowball was lost rather than the on-going internal feelings of the loss of the cat itself.

AB thus presented as a typically developing child who is viewing the narrative of the story consistently from an external perspective. AB remembered and understood the events of the story and could process the emotions consistent with these events. However, he was unable to project himself into the character of the protagonist Mike. AB was therefore unable to identify emotions and emotional responses consistent with an ongoing relationship which exists outside of the specific events conveyed in the story.

Use of picture supports (*The Kitten Story*)

There was some evidence in AB's transcript that he was able to use the pictures provided to produce somewhat more advanced thinking. Despite initially stating that Bill remained happy when he thinks about Snowball, AB was able to say (looking at the visual support provided by the pictures) that the sad feelings about losing the kitten will remain even when he is happy (AB4). AB also said that the sad and happy feelings are experienced at the same time, although they remain separate and do not overlap or impinge on one another (AB5). AB then resolved this contradiction by explicitly linking Bill's two feeling states to the different (external) behaviours of the two kittens: *(looks at story picture cards at beginning of utterance) Uh..because he had two kittens and one did something wrong and the other did it right*. This represents slightly more advanced thinking skills than in *The Puppy Story* (which did not have picture supports) when AB maintained that the contradictory feelings love and anger could only be experienced at different times as well as spatially distinct *(First one and then the other and Stay separate)*.

Throughout both interviews AB presented as a child who was consistently unable to reflect on the internal emotional and psychological states of the protagonist in the context of a relationship which existed over time (past and future). The use of pictures takes away the difficulties of maintaining a hold on the time course of the narrative since the pictures allow all the (sequential) events in the story to be continually (visually) present. AB's more advanced thinking regarding the temporal experience of sad/happy (at the same time) suggested that he may have been helped by having the story depicted in pictures.

Difficulties evolving a mature explanatory model of emotional ambivalence

However, the pictures did not help AB's difficulties with understanding how a past event and the feelings associated with it can continue to influence present and even future events and feelings (Bill's feelings and relationship with the new kitten). AB's utterance that Bill *had two kittens and one did something wrong and the other did it right* implied that the kittens were coeval

(as the pictures of the kittens exist visually at the same time) rather than existing at different times. It is only Bill's feelings (not made visible by the pictures) which actually persist through the narrative and not the two kittens. It is this internal (and invisible) feeling state which AB, and younger or less emotionally mature language normal children, find difficult to recognise and understand. Key to this difficulty is the inability to view the narrative events from the internal perspective of the story protagonist.

As in *The Puppy Story*, AB used conjunctives to link feelings with external events which can be separated. AB used a causal conjunction (*because*) to link the feelings associated with the two cats to their separate behaviours. He did not use an adversative conjunction which would have expressed the internal oppositional nature of the two (temporally) co-existing emotions. Although Bill can have sad feelings about the loss of Snowball (or rather about what Snowball *did* – escape through a window), this sadness does not impinge upon his happy feelings with the new kitten and there is no awareness of the contradictory nature of the emotions and an appreciation of Bill's consequent emotional experience (confusion, distress).

AB's linguistic weaknesses at the time of the research and his early social interaction difficulties can be viewed in relation to his response to the experimental task. In order to detect and resolve the ambivalent emotions in the experimental task AB had to:

- retain and understand the events of the stories presented.
- identify the emotions which are triggered by the events in the story.
- identify the emotions of the protagonists which persist through time (past and future) and are independent of the story events (the love/sadness which is part of Mike/Bill's ongoing relationship with Pepper/Snowball).

- co-ordinate the emotions from the events with the emotions from the relationship, understanding that they are experienced by the protagonists at the same time.
- recognise the contradictory nature of the two sets of emotions and the resulting confusion of feelings.
- understand that this contradiction can be resolved by the two emotions interacting (mixing) and influencing each other. (The love/happiness will ameliorate the anger/sadness).

The interview questions, targeting the child's ability to detect and resolve ambivalent emotion, thus required an ability not only to understand spatial and temporal concepts but to reflect on that understanding and apply it to complex abstract psychological states (emotions are understood either as separate or mixed together, occurring sequentially or at the same time). Although at the time of the research AB had a range of age appropriate semantic skills he had experienced persistent and severe difficulties with conceptual development, especially temporal and spatial concepts, during the primary school years.

Younger (7 - 8 year old) language normal children supported their ability to understand the narrative from the point of view of the protagonist (and so access his/her feelings in relation to events and the ongoing relationship) by imaginatively projecting themselves into his/her character (*mental role play*). Use of *mental role play* was significantly correlated in this age group with scores representing greater emotional maturity (Levels 2 -3).

AB maintained an external perspective throughout both interviews with no attempt to create an alternative narrative from the point of view of the story protagonists. There were no examples of *mental role play* in his transcripts. This was consistent with the younger (4 – 5 years old) or less emotionally mature typically developing children.

As a pre-school child AB presented with age appropriate symbolic play skills but severe difficulties with developing social interaction and social play with peers. AB continued to present with poor peer interaction and social skills at primary school and attended numerous social skills workshops and groups run by Speech and Language Therapists. These concentrated on identifying and labelling emotions in the self and others. Poor social interaction and early role play skills may have contributed to the lack of *mental role play* in AB's response to interview questions. Continuing difficulty acquiring the ability to empathise (project oneself imaginatively into the character/situation of another) would be consistent with an older child like AB maintaining an external perspective to narratives.

AB presented with the lowest expressive language percentile score (3) but the highest receptive language percentile score (16) of the four subjects in this study. This suggests that the development of emotional maturity may be particularly demanding of expressive language skills. Some support for this was found in the typically developing children's results (Chapter 3). Older boys (10 – 11 years) who were less effective than the older girls at using cognitive and linguistic devices presented with increased numbers of expressive performance errors relating to syntax.

It is likely that AB's difficulties with complex syntax, especially his understanding and use of conjunctions, particularly causal and adversative conjunctions would affect the ability to use "inner speech" (the individual's internal dialogue) to establish and reflect on the narrative of emotions presented in the two stories. In addition, AB's receptive and expressive difficulties with adversative conjunctions would make it difficult for him to develop awareness of the contradictory nature of ambivalent emotion. This is reflected in the scores (Level 1) obtained by AB for his responses to interview questions.

Typically developing children at Level 2 were able to view the narrative from the point of the story protagonist and begin to co-ordinate temporally persisting internal feeling states relating to ongoing relationships with the

feelings provoked by external events. Results from the language normal study showed that *metaphor* was the most frequently used device by children at this stage of development (both age groups). *Metaphors* allowed typically developing children to gradually conceptualise a way of understanding the contradictions of ambivalent emotions which eventually moved towards the adult model of viewing the body as a container with emotions mixing and thereby influencing each other.

Despite a number of age appropriate semantic skills AB's ability to understand figurative language was below average. It is therefore unlikely that AB would have had sufficient skills to create and apply *metaphors* to internal psychological states even had he been able to establish a perspective from the story protagonists' point of view and had an awareness of contradiction through a secure understanding and use of adversative conjunctions. No *metaphors* were found in AB's transcripts who used the least number of cognitive-linguistic devices for any of the SLI children. In the 7 – 8 year old language normal group, lack of cognitive-linguistic devices was associated with the lowest level of emotional maturity for the group (Level 1, the same as that achieved by AB).

In conclusion, AB's responses for both *The Puppy Story* and *The Kitten Story* were consistent with typically developing children at a much younger age or immature level of emotional development, relative to his chronological age. There was no evidence of atypical responses to questions relating to contradictory feelings as AB's understanding of emotions was below the level at which contradiction is acknowledged. The only atypical response noted in AB's data was when he conceptualised loving feelings as *normal* and was unable to describe the emotional content of that feeling. This suggests that reflecting on, and putting internal feeling states into words, even relating to single basic emotions, is particularly difficult for children with impaired language no matter what stage of emotional development they are at.

Causal theories of emotions

AB obtained a Level 1 for his understanding of what causes emotions to change for both *The Puppy Story* and *The Kitten Story*. Negative feelings come and go in response to external events and circumstances and can only change if a change of events occurs

In AB's responses to the interview questions there was no reference to internal thoughts and memories having an affect on the protagonists' present feelings of anger/sadness. The child exists in a passive relationship with his feelings and must wait for a change in external events in order to effect a change in his internal feelings state. There is nothing Mike, Bill, or children in general, can do to exert control over their feelings and change them independently of circumstance. Without such control there is little or no understanding of emotional responsibility and the role an individual can play in directing their emotional reactions to events. Feelings are bound to the situations which give rise to them and so return if provoked by events.

AB's theories of emotional causality were consistent with typically developing children at Level 1 who maintain an external perceptive towards events and feelings. This represents a delay in AB's thinking about emotions given his chronological age of 11 years 2 months. There were no examples in AB's transcripts of atypical responses in reply to questions relating to what causes emotions to change.

Social and emotional development and research findings

The emotional immaturity AB demonstrated in his responses to the structured interviews was supported by the views of his parents regarding AB's social and emotional development current with the research.

AB's parents reported high levels of concern regarding his social and emotional immaturity. Both parents spontaneously commented that AB, like a very young children, appeared to have very little control over his emotional reactions to events. AB tied with JD for the highest level of concern recoded

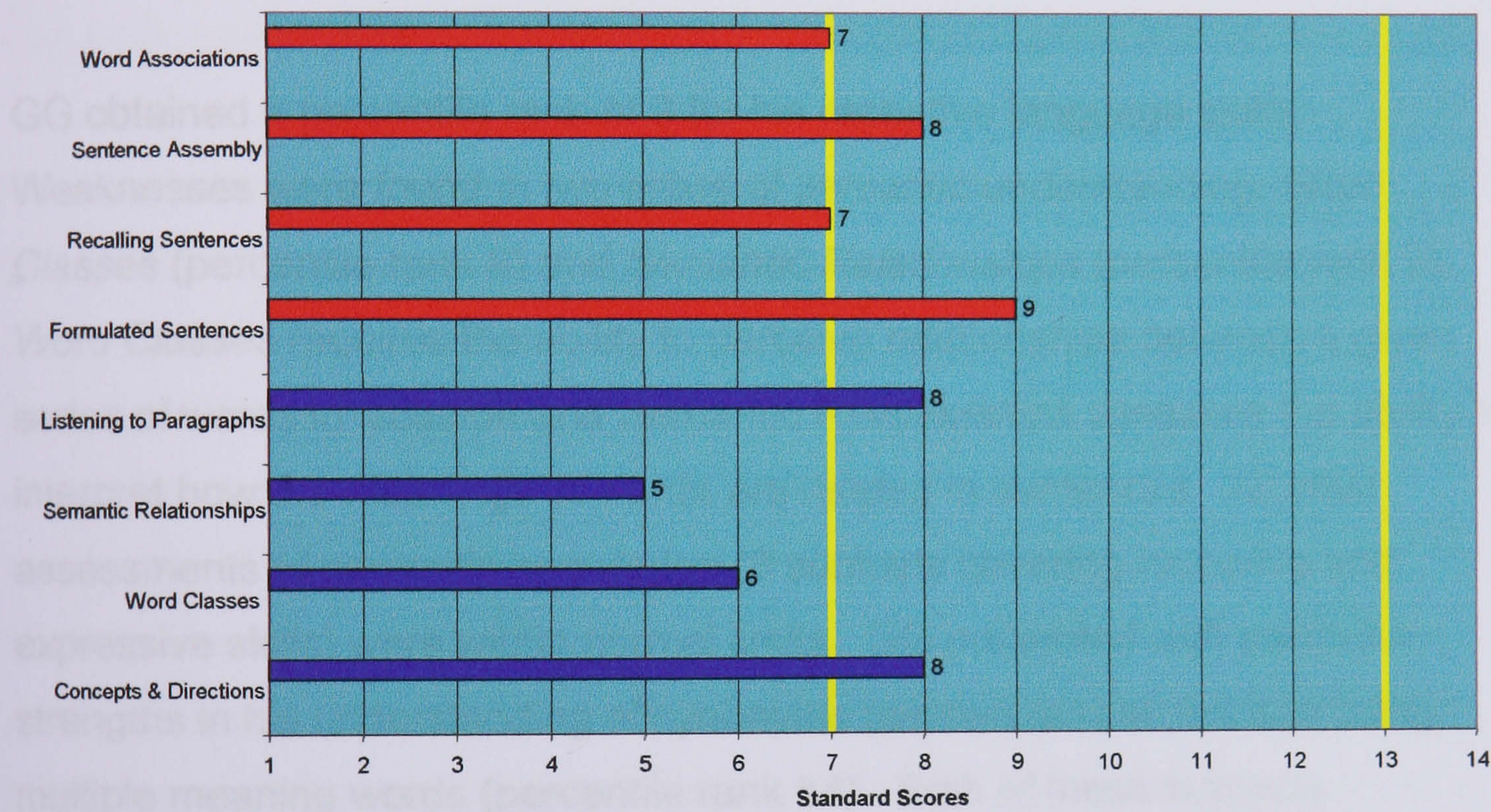
by parents in *The Pragmatics Profile*. At the time of the research AB's parents said that he was still subject to severe tantrums which could be aggressive although these were lessening in frequency as he got older. (See summary of parent interview Appendix 12). They reported that it was necessary to just let these emotional outbursts run their course as it was not possible to reason with AB. This behaviour is consistent with a child who, like AB, has an immature understanding of emotional causality, believing that feelings are tied to the events which give rise to them and can only be changed by a change in events and who therefore has little control over, or responsibility for, their internal states.

Subject: GG
Chronological age: 9 years 10 months

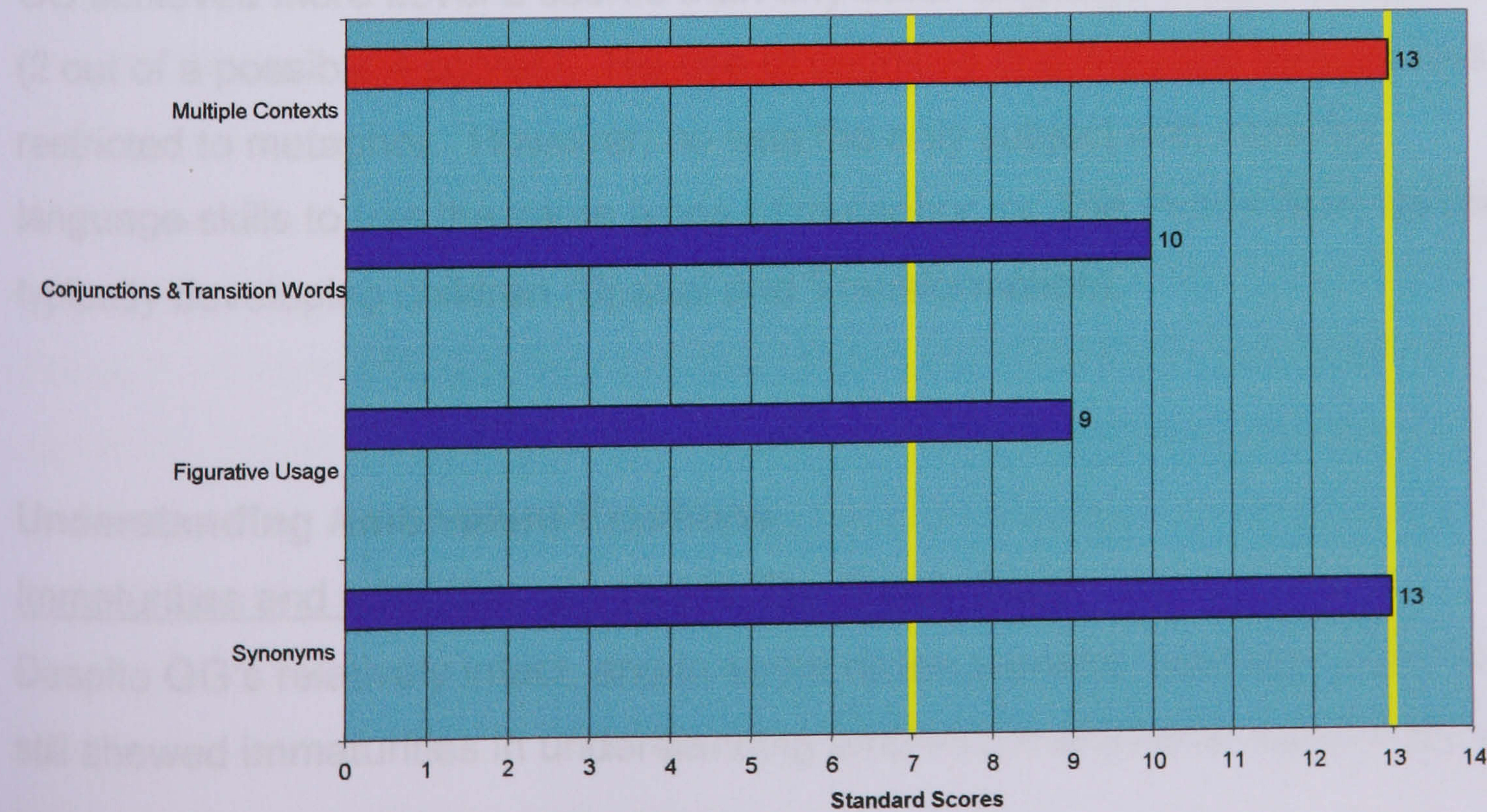
Bar Charts 5-6: CELF and TOWK subtest standard scores for subject GG

Expressive subtests are in red and receptive subtests are in blue.
Lines in yellow indicate the average range for standard scores (7 – 13).

Bar Chart 5 showing CELF subtest standard scores for subject GG aged 9 years 10 months



Bar Chart 6 showing TOWK subtest standard scores for subject GG aged 9 years 10 months



Language Profile

GG presented with the strongest language profile of all four language impaired subjects with scores for only 2 out of the 12 subtests administered falling below average. All the tests of GG's expressive language were within the average range for his age. However he did present with an uneven expressive profile and his standard scores ranged from 7 (low average) to 13 (high average). Both his Expressive language score and Total language score were within the average range for his age (percentile ranks 23 and 18 respectively).

GG obtained a percentile rank of 9 for his receptive language skills.

Weaknesses were found in two areas of semantic understanding: *Word Classes* (percentile rank 9) and *Semantic Relationships* (percentile rank 5). *Word Classes* requires the ability to perceive relationships between a given series of words in isolation and *Semantic Relationships* assesses the ability to interpret how the meanings of words are related in sentences. All other assessments of semantic knowledge (3 subtests covering receptive and expressive skills) were within normal limits. GG presented with particular strengths in his understanding of synonyms (percentile rank 84) and using multiple meaning words (percentile rank 84). Both of these subtests represent assessment of semantic knowledge.

GG achieved more Level 2 scores than any other language impaired subject (2 out of a possible 4 scores). His use of cognitive and linguistic devices was restricted to metaphor. However, he was the only subject with impaired language skills to use the same types of metaphor for *The Puppy Story* as the typically developing children (Spatial and Transformation).

Understanding Ambivalent Emotions

Immaturities and maturities present in *The Puppy Story*

Despite GG's relatively intact, and in some cases superior, language skills he still showed immaturities in understanding ambivalent emotions, specifically in

The Puppy Story. This was alongside GG's ability to demonstrate a number of sophisticated thinking skills in his responses to interview questions.

In *The Puppy Story* GG showed evidence of typical Level 0 and Level 1 thinking. Initially he named only negative feelings and needed reminding of Mike's earlier feelings of love towards Pepper before he could be helped to co-ordinate contradictory feelings. In GG's resolution of ambivalent emotions the loving feelings are closely linked to the behaviour of Pepper rather than any intrinsic and lasting worth that the dog might have for Mike, and Mike's love for Pepper is dependent on Pepper being nice again. (GG1).

However, with the prompts permitted by Donaldson and Westerman's protocols, GG was able to acknowledge that Mike could feel love and anger but consistent with Level 1 thinking these feelings occur sequentially rather than at the same time: *Because when you done something good then something bad*. GG was able to demonstrate a developing conscious awareness of the contradictory nature of ambivalent emotions. Even though he maintained the temporal separateness of the opposing emotions he was able to acknowledge confusion *sometimes* results. There was no indication however that GG understood how feelings could impinge or interact with one another. His interpretation of interview questions and his responses were then consistent with typically developing children at Level 1.

Given GG's chronological age (9 years 10 months), he would be expected to have at least scored in line with the most mature 7 – 8 year old children achieving the higher Levels 2 or 3. GG's Level 1 score for understanding emotional ambivalence in *The Puppy Story* is, however, in line with the least mature 7 – 8 year olds and represented an immaturity in GG's emotional cognition. Nevertheless, although overall the explanatory model GG used to understand Mike's feelings was scored at Level 1, GG was able to convey a relatively sophisticated idea of contradictory feelings and his growing awareness of their inherent confusion, and hence the need to keep them separate. In answering questions on opposing emotions in Part 3 of the story he used *metaphor*, like the typically developing children, to create a distinct

spatial location for one of the feelings (loving *feeling in his head*). In addition he was also able to express understanding about how we infer the workings of other minds and develop empathy: *you ima'..imagine it*. In other words you have to project yourself into the position, psychologically and emotionally, of others (GG2).

Here, GG's emotional cognition, i.e. the way in which he conceptualises emotion, is consistent with that of typically developing children who are working towards a fully mature understanding of ambivalent emotion. GG was able to demonstrate the use of psychological *metaphor* despite the two areas of semantic impairment shown by formal language assessment. GG scored well within the average range for understanding figurative language but also in the 84th percentiles (high average) for understanding synonyms and using multiple meaning words. This suggests an ability to manipulate language flexibly which, together with his average conceptual understanding, appeared sufficient to enable the creation of complex metaphors. Thus although GG's Level1 represented an immaturity given his chronological age, a qualitative analysis of his transcripts revealed that out of all 4 of the SLI children his thinking skills, especially his use of cognitive-linguistic devices (*metaphor*), most closely matched those of typically developing who are progressing towards the most mature forms of resolving emotional ambivalence. However explicit use of *mental role play* was absent from his responses and it had been this cognitive-linguistic device which had been strongly correlated with the most mature 7 – 8 year old typically developing children.

Ability to use picture support to develop thinking skills (*The Kitten Story*)

There is evidence to suggest that the picture supports helped GG's achieve a higher score for understanding ambivalent emotions for *The Kitten Story* (Level 2) than *The Puppy Story* (Level 1). Together with the already developing sophistication of GG's abilities discussed above in *The Puppy Story*, the support of pictures enabled GG to extend his thinking further.

Unlike *The Puppy Story* when GG was asked the first question relating to Part

2 of the story (ambivalent emotions) i.e. how Bill feels about his new kitten he was able to spontaneously co-ordinate sad and happy feelings without prompting: *(looks at story picture cards)Um..happy and sad?*

GG was also able to show that the gift of the new kitten was a mixed blessing which would evoke both happy and sad feelings:

R: Um..and why does he feel happy and sad?

GG: 'Cos he..um.. (looking at story picture cards) Snowball's still missing.

R: Yeah. So..

{GG: Like then..he will feel like that. (points to one of the story picture cards)

*R: Yeah. Oh I see. Yeah. That's a very good one. You've pointed at the picture where..you can see **both** kittens. (GG nods head) So he'd feel happy because ()?*

GG: ...Um.. (looking at story picture cards) he'd got a new kitten.

R: That's right. And he'd feel sad ()?

GG: (looking at story picture cards) Because Snowball's missing and stuff.

Here, the importance of GG's response is that firstly, to support his answer he selected the one picture which makes explicit Bill's internal thoughts and that secondly he used this picture to stand in for a verbal reply: *he will feel like that. That* refers to the feelings associated with the picture where Bill is telling his parents that a new kitten wouldn't be the same as Snowball. The picture depicts Bill with the kittens inside two separate thought bubbles. Between the

two thought bubbles is a symbol: ≠ indicating that Bill does not view the kittens as *the same*. By using this card GG was able to demonstrate some knowledge that internal thoughts affect feelings (the two kittens are *not the same* and so Bill's feelings towards them are not the same). However, GG did not verbalise this understanding but simply pointed to the card. It was the researcher who then expresses this understanding in words to which GG then agreed.

A further example of GG using this picture to revise his thinking and then support his expressive language occurred slightly later in his transcript. Although GG was beginning to see that contrasting feelings are part of an ongoing process rather than related simply to disjointed events, he gave contradictory answers to the time and space questions. However he was able to reflect and alter his original answer regarding how the feelings are experienced in time:

*R: Do you think that Bill feels happy and sad at the **same** time or first **one** and then the other?*

GG: First one and then the other? (very uncertain)

R: Ye'

*{GG: (Very rapid) **No**. (looks at story picture cards & points to one) Or altogether because..together 'cos when it was there. (points at story picture card again – more firmly and actually touches it)*

*R: Yeah. Yes. That's right so he..again you've chosen one that shows **both** kittens and there's Bill..so he'd feel them both at the same time? (GG nods head) Yeah. Well done. That's it. And..do you think that the sad feelings mix together with the happy feelings or do they stay separate?*

GG: (looking at picture cards R. has placed on table)Um..they

could stay sep'..rate.

Using the picture supports provided, GG was able to revise his initial answer to the time question although he still retained a spatial separation between the two emotions. While such responses are not exclusive to Level 2 they are a hallmark of the child's difficulty in fully resolving the dilemma of ambivalent emotions by struggling to maintain their separateness in some way. Considering all his responses GG was given a Level 2 for his ability to understand ambivalent emotions.

The importance of GG's response is that he again used a picture to express visually what he wanted to say verbally: *Or altogether because..together 'cos when it was there* (touches picture). GG was the only one of the SLI children who did this. It is significant that GG was able in both stories to demonstrate sophisticated thinking skills and a use of cognitive-linguistic devices comparable to those of typically developing children. This suggested that GG, the least language impaired of the SLI children, already had in place a number of the linguistic and cognitive skills required for resolving ambivalent emotions and that the pictures simply helped GG access these skills. In other words the pictures did not replace the need for these skills to be available to the child and hence why they were less helpful to the other, more severely, language impaired children.

In conclusion, for both stories GG's responses to questions relating to ambivalent emotion were consistent with those of typically developing children aged 7 – 8 years. There were no atypical responses. The use of pictures appeared to help GG use his good syntactic skills to develop his thinking about emotional ambivalence in *The Kitten Story* and so achieve a higher emotional ambivalence score than he did for *The Puppy Story*. This higher score was despite not using any *metaphors* for part two of *The Kitten Story* which dealt specifically with ambivalent emotion. It is suggested that the picture which showed the two kittens, and which was itself a representation of Bill's concurrent thinking about the two kittens, replaced the need for GG to conceptualise this in words. Further research with both language impaired

and language normal children is needed to explore this.

Causal theories of emotions

GG obtained a Level 2 for his understanding of what causes feelings to change for *The Puppy Story* and a Level 1 for *The Kitten Story*. GG's responses to the questions relating to emotional causality were consistent with those of typically developing children at Levels 2 and 1 respectively. There was no evidence of atypical thinking.

The differences in GG's responses which resulted in a greater demonstration of maturity for *The Puppy Story* suggested that the pictures used to support *The Kitten Story* were more useful in developing children's thinking about ambivalent emotions than their theories of what causes emotions to change. In support of this theory, the picture which helped GG was specifically that which showed both kittens, thus giving a visual representation which explains Bill's internal psychological and emotional state (feeling different emotions related to the different cats but at the same time). Additional research is required to explore this further.

Social and emotional development and research findings

GG's responses to the research interview questions for the two stories support information obtained from language assessment and parent/teacher interviews. GG presented with the least impaired language profile with his expressive language scores within the average for his age and, marginally, the most mature emotional profile in terms of the Levels of understanding obtained on the Donaldson and Westerman model.

Unlike the other language impaired subjects (JD, AB and ER) GG presented with no difficulties with receptive or expressive syntax. GG was able to demonstrate an ability to use picture supports in *The Kitten Story* to develop his thinking. This ability to reflect on and revise answers had not been noted in the transcripts of the other language impaired subjects, all three of whom

had difficulties with syntactic development. In his answers to interview questions for *The Puppy Story*, GG had also been the only language impaired subject to use the same types of *metaphor* as typically developing children. Comparison between GG's good expressive language skills and AB's good receptive language skills but poor expressive skills suggests that the level of expressive language was a better indicator of the subjects' level of emotional maturity than was the level of receptive language.

GG's language difficulties had not been identified until he was in primary education. There was therefore no assessment available of his early interaction and play skills. His mother had rated him as young for his age however she did not have the same degree of concern regarding his social and emotional development as the other parents. Mrs. G's main concern regarding her son was related to academic ability and especially literacy.

GG's mother declined to fill in *The Pragmatics Profile* but this was completed with her permission by the class teacher. The class teacher recorded moderate levels of concern on all aspects of the *Teacher's Report Form*. The exceptions were no concerns regarding anti-social behaviour and high levels of concern relating to GG's poor concentration in class. The teacher recorded moderate levels of concern in all areas of *The Pragmatics Profile* except *Contextual Variation* where there was no concern expressed. This represented the lowest level of difficulty recorded by *The Pragmatics Profile* for any of the language impaired subjects. It is not possible to say what effect if any may have been due to the recorder being the teacher rather than a parent.

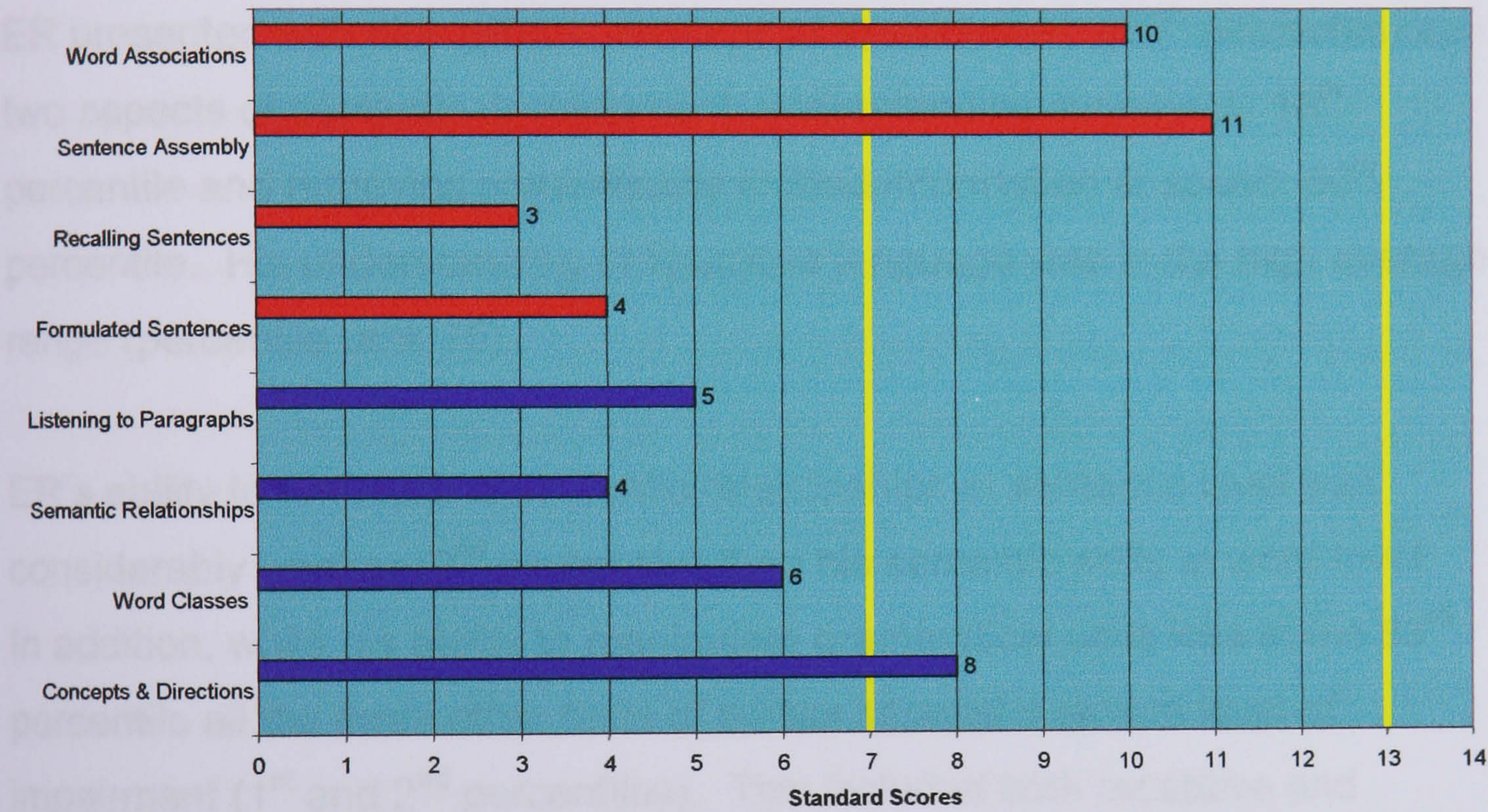
Subject: ER

Chronological age: 9 years 3 months

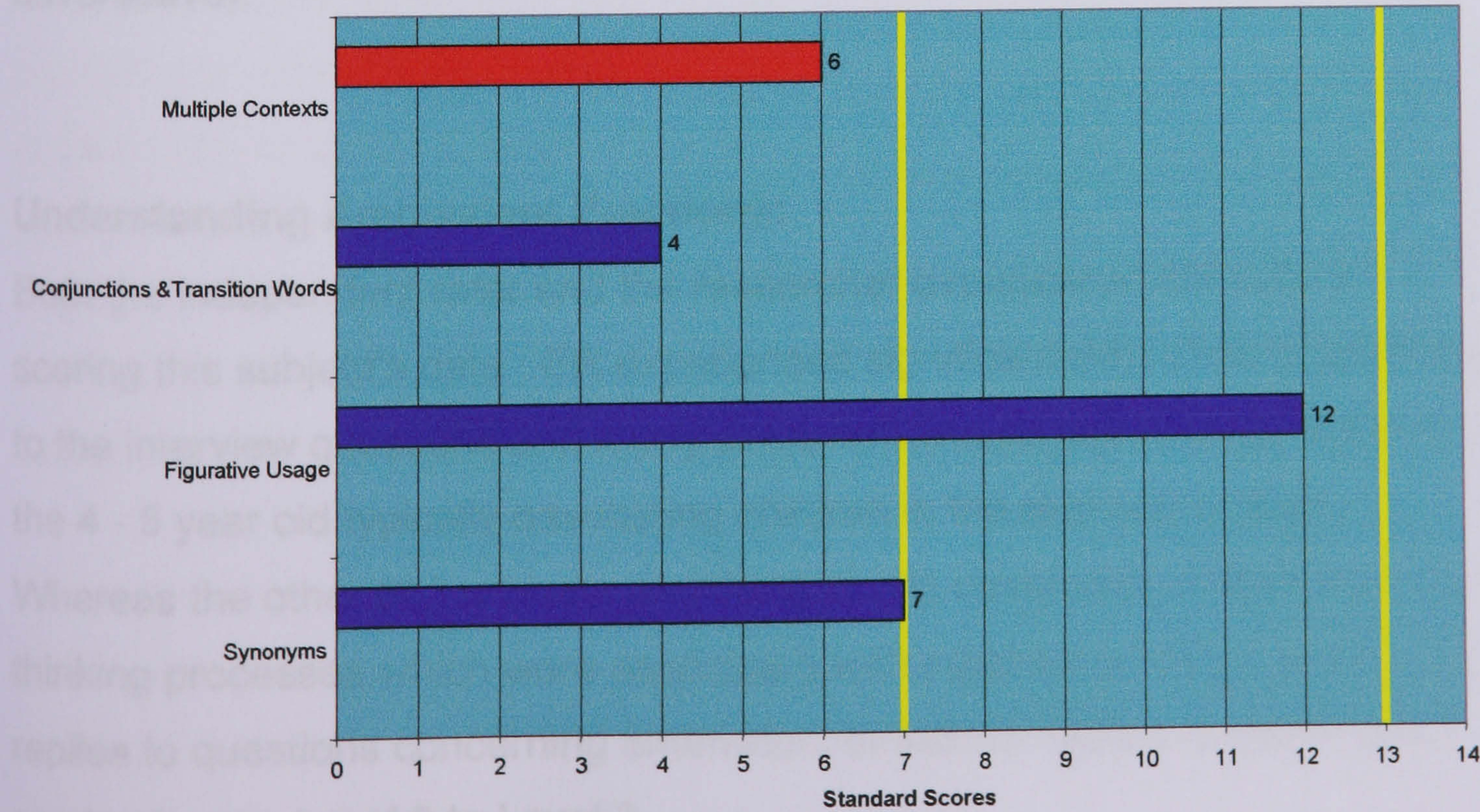
Bar Charts 7-8: CELF and TOWK subtest standard scores for subject ER

Expressive subtests are in red and receptive subtests are in blue.
Lines in yellow indicate the average range for standard scores (7 – 13).

Bar Chart 7 showing CELF subtest standard scores for subject ER aged 9 years 3 months



Bar Chart 8 showing TOWK subtest standard scores for subject ER aged 9 years 3 months



Language Profile

ER was the youngest of the four language impaired subjects. ER also presented with the most impaired language profile with 7 out of the 12 subtests below the average range for his age. However, like the other language impaired children ER's profile was uneven with strengths and weaknesses in both his receptive and expressive language. Percentile ranks for individual subtests ranged from 1 – 75. Overall, ER obtained a percentile rank of 5 for both his receptive and expressive language abilities.

ER presented with strengths in conceptual development (25th percentile) and two aspects of semantic development: understanding synonyms: 16th percentile and retrieving semantically related information at speed: 50th percentile. His understanding of figurative language was in the high average range (percentile rank 75).

ER's ability to understand semantic relationships at sentence level was considerably weaker (2nd percentile) than his semantic skills at word level. In addition, while his ability to manipulate grammatical units was at the 63rd percentile all the three other tests of syntax showed a severe level of impairment (1st and 2nd percentiles). This included both receptive and expressive syntax. ER presented with particular difficulties in both the understanding and use of all conjunctions (additive, temporal, causal and adversative).

Understanding Ambivalent Emotions:

Both the independent rater and the researcher experienced difficulty in scoring this subject's data. ER experienced significant difficulties responding to the interview questions and many of his behaviours were similar to those of the 4 - 5 year old typically developing children in the replication study. Whereas the other SLI subjects and the typically developing children showed thinking processes which were associated with adjacent scoring Levels, ER's replies to questions concerning ambivalent emotions related to extremes of scoring levels: Level 0 to Level 3.

Avoidance of emotional ambivalence

ER was the language impaired subject who most persistently sought to avoid ambivalence, both emotional and cognitive. In terms of emotional contradiction this included:

- repeated reworking of the stories
- denial of negative emotions

In *The Puppy Story*, ER made a number of revisions in his re-telling of the story in order to avoid the deliberate destruction of Mike's plane by the dog: the plane vanished, broke on impact, wasn't controlled properly by Mike, Pepper pressed the wrong control button. Eventually the researcher had to re-state that Pepper destroyed the pane by chewing it up. In *The Kitten Story* ER reworked the story so that Bill returned to his bedroom and found Snowball. ER was adamant that this had occurred until the researcher replayed the taped story.

Even after being presented with Pepper's destruction of the plane and the loss of Snowball, ER was very reluctant to admit that Mike/Bill could be experiencing any negative feelings. He admitted that Mike would be *A bit sad* but when pushed to explain this linked the feeling with the waste of time in making the plane rather than with Pepper's destruction of it (ER1). With the prompts permitted by the research protocols ER grudgingly and reluctantly agreed Mike could be *Kind of angry* or later *Quite annoyed* but overall this appeared unconvincing. When further prompted to name other feelings in addition to sadness ER mentioned forgiveness. Forgiveness is usually associated with Level 2 or 3 responses however, in the context of ER's replies it appeared yet another way of avoiding ambivalence (ER1).

Difficulties tolerating cognitive ambivalence

Part of the American protocols for the presentation of the stories was that each subject was told that there were no right or wrong answers to the questions. ER found this particularly difficult to deal with and continually wanted to know if he had answered the questions correctly or not. Not being able to give him this reassurance increased his stress and had an adverse effect on his motivation to attend. This was especially noticeable during *The Kitten Story* interview when ER was already experiencing decreased attention levels due to comprehension difficulties (see below).

ER's difficulties dealing with uncertainty were not only apparent during the questions on ambivalent emotion in Part 2 but also during Part 1 when he was asked about same valence emotions. ER was able to identify that Bill, the story protagonist, was angry and sad. However, ER had no way of talking about these feelings and how they might be experienced. He became increasingly uncertain and confused, wanting the researcher to tell him "the answer" (ER2).

ER's inability to exist in a state of intellectual uncertainty appeared to mirror his difficulty in coping with emotional ambivalence and may explain his continual attempts in both stories to rework the narrative in order to avoid the possibility of contradictory feelings. In addition, the *metaphors* used by ER were consistent with early language development and used shared attributes. They did not use conceptual or psychological knowledge which was used by the typically developing children when constructing *metaphors* to cope with the illogical, contradictory content of ambivalent emotion.

Comprehension difficulties and avoidance strategies

ER experienced great difficulty understanding the interview questions which sought to elicit the rationale behind his understanding of contradictory emotions. He often responded that he didn't know the answer or that he didn't *get* the question and further replies were consistent with Level 0 responses. The following are responses taken from just one page of his

transcript for *The Puppy Story*:Um..I don't know. (looks away – very puzzled facial expression – shrugs shoulders); ..Yeah. (very quiet and uncertain) (hand in front of mouth);...Um..no. (uncertain); I don't know

ER presented with increased difficulties with attention during the second session (*The Kitten Story*). ER had been very aware of his difficulties understanding and responding to the interview questions for *The Puppy Story*. Since *The Kitten Story* questions in Part two are the same as those for *The Puppy Story* it is likely that ER's attention decreased once he became aware of this. In addition there are many more questions for Part one of *The Kitten Story*, based on those in Part two but directed at single valence emotions (sad/angry). This overall increase in the number of very demanding questions is also likely to have been stressful for ER and resulted in decreased concentration and attention.

ER's behaviours throughout *The Kitten Story* session resembled those of the 4 – 5 year old typically developing children in the replication study (Chapter 2). Like these much younger children he used a number of strategies either to avoid, or cope with, answering the interview questions which related to topics outside of his level of psychological understanding. These included asking the researcher questions to delay the asking of the interview questions and developing an elaborate game with the pictures presented to support the interview questions. This involved the researcher having to shut her eyes while ER shuffled and then presented the pictures to answer the questions. The rules to this game became increasingly elaborate, deliberately making it harder to understand exactly what ER's response to the questions was and so allowed ER to mask his comprehension difficulties. Eventually the game included ER hiding the pictures around the room. When the researcher persisted in asking questions ER eventually remained seated at the table but began building a house of cards using the facial expression pictures.

In addition to these strategies ER also repeatedly asked the researcher if she could muddle the story pictures cards so he could re-sequence them. Sequencing story cards was a frequently used Speech and Language

Therapy task and one with which ER obviously felt very comfortable. At the end of the session ER was allowed to re-sequence all 14 story cards which he did easily and correctly indicating that he had no difficulties retaining and sequencing the narrative events of the story.

Like the 4 – 5 year old typically developing subjects, ER presented as a child confronted with questions beyond his psychological understanding rather than his linguistic comprehension. Like these younger children, comprehension difficulties arose when ER was asked to explain the rational behind his emotional understanding rather than when asked simply to identify the emotions involved.

Inability to establish an explanatory model of ambivalent emotion

In both *The Puppy Story* and *The Kitten Story* ER was able to demonstrate insight into the protagonists' contradictory emotions but unable to construct any explanatory model to account for this. In *The Puppy Story* ER originally mentioned forgiveness, a Level 2 or 3 response, as a way of avoiding the negative and ultimately contradictory emotions associated with Pepper's destructiveness (Level 0). However, later in the interview ER provided further information about the nature of Mike's forgiveness of Pepper suggesting that it grew out of a mixture of empathy, sympathy and guilt and was part of the ongoing relationship between Mike and his dog (ER3). This is characteristic of Level 3 thinking.

ER made continued references to forgiveness throughout the interview. He also stated that Mike would feel differently if a neighbour's dog had wrecked the plane because Mike likes Pepper but does not like the neighbour's dog. This suggested some awareness that Mike has a relationship with his dog which would affect his feelings and behaviour (ER4). At the end of the interview ER asserted that if he was in Mike's position he would forgive the dog.

However, this mature appreciation of aspects of events and feelings presented in the narrative was consistently embedded in responses typical of emotionally immature understanding. (For example, Level 0 reworking of the story to avoid ambivalence and negative feelings and Level 1 conceptualisation of feelings as occurring at different times and experienced separately: ER5). ER was able to demonstrate some limited awareness of the inadequacies of his own responses. After stating that feelings were experienced: *One and then the other* and: *Stay separate*

ER attempted a fuller explanation and tried to revise and refine his answers: *Um..I don't know between those two. They're the same. 'Cos you can be angry and loving together and they can be split up.* However, when prompted ER was unable to give any explanation or justification for this statement that love and anger can sometimes be experienced together:*Um..I don't know. (looks away – very puzzled facial expression – shrugs shoulders).*

The difficulty with ER's data was that while he was able to demonstrate empathic understanding of Mike's feelings and his behaviour in relation to his dog, which was at a mature level, his ability to justify and explain his thinking i.e. his ability to resolve ambivalent emotions by the application of an explanatory model of how feelings work, was extremely limited. His intuitive understanding of Mike's feelings could only be explained using linguistic skills sufficient for a less mature rationalisation of contradictory emotion.

In the data of the typically developing children aged 7 – 8 years use of cognitive-linguistic devices was associated with more mature emotional understanding. ER used more cognitive-linguistic devices in response to questions about *The Puppy Story* than any other SLI subject. These consisted of three examples of *mime*, one *metaphor* and one example of *mental role play*. In addition, although none of the SLI subjects used *personal experience* when answering the interview questions ER did make what might be personal allusions in two examples giving insight into Mike's relationship with this dog (Mike and Pepper liked watching videos together and, later in the transcript, angry feelings could be made to go away if: *Mike could do the dog's writing*).

However, ER's devices were themselves constrained by his impoverished language skills and ER used no cognitive-linguistic devices in Part 2 of the story which dealt specifically with ambivalent emotion. ER's *metaphor* was not, like the language normal subjects' complex psychological *metaphors*, created to help conceptualise and express an understanding of the contradiction of ambivalent emotion. Instead, ER's *metaphor* was typical of much younger children's early metaphoric development and used only to describe the single basic emotion *anger*.

ER's use of *mental role play* (the only example of its use by any SLI subject) again occurred when ER was describing Mike's anger:

R: And how else would Mike show his angry feelings?

ER: Angry feelings..um like (said to self)..... Ss'sad..because um..dog could cry and..and sa'..and dogs mi'..could dry (sic. phono.) and um..Mike said sorry to say that but I'm not allowed to say that and..oh....they will be friends. MRP (goes into role – tone of voice/intonation alters)

Here ER is able to demonstrate a use of *mental role play* whereby he imaginatively projects himself into the character of Mike, and which reflects those aspects of ER's more emotionally mature awareness of Mike's feelings. However, although ER clearly took on the role of Mike talking to his dog, the meaning of the utterance is very unclear. ER appeared to be referring to Mike's anger and sorrow which leads to the repair of their relationship. However, ER continues to have difficulty in expressing ambivalent emotion and its resolution and even with the use of *mental role play* his language breaks down. The emotions articulated are same valence emotions (sad/angry) and ER's final comment, outside of the character of Mike: *and..oh....they will be friends*, like ER's earlier mention of forgiveness, serves only to avoid the confusion inherent in ambivalent emotion.

ER presented with similar difficulties in his interview for *The Kitten Story*. ER

spontaneously identified that Bill would feel happy and sad when given a new kitten. The scoring manual guidelines state that when a child spontaneously co-ordinates happy and sad feelings a Level of 2 or 3 should be considered. However, ER had no ability to think through the implications of what he had said and so establish a framework for understanding and ultimately resolving emotional ambivalence.

Unlike Level 2 or 3 children, ER was unable to present any rationale for Bill's feelings and when pushed for explanations by the interview questions fell back on Level 0 thinking and denied the existence of ambivalence (ER6). Having already stated that Bill feels happy and sad and that the sad feelings don't go away when Bill is happy, ER was unable to offer any explanation of how this might be experienced. ER denied it could be confusing and when pushed further invented the return of Snowball. When this is refused by the researcher ER's responses became progressively random until his attention decreased and he repeated his request to sequence the story picture cards which was a task he knew he could do.

ER presented with an intuitive appreciation that the gift of the new kitten would create happy and sad feelings, and hence spontaneously identified these emotions at the beginning of the interview. Unlike typically developing children ER did not have any means of dealing with the contradictions and inconsistencies this created. He did not explicitly present the Level 1 rationale which would be to associate the two separate feeling states with the two events of losing Snowball and being given a new kitten. Indeed he stated that Bill would feel sad because he missed Snowball, a Level 2 type response suggesting the feeling states would overlap in time and co-exist. This was emphasised when ER also stated that Bill's sad feelings don't go away when he is happy.

This should lead to the confused thinking typical of Level 2 where the child recognises that contradictory feelings can co-exist and so begins to see that feelings can interact and influence one another but has no explanatory model to support this awareness. The child does not yet understand that feelings

can be related to enduring memories or qualities that exist independently outside of the current feeling state and outside of the momentary situation.

Such children typically struggle to keep the contradictory feelings separated temporally and spatially (such as using metaphors which locate the feelings in different parts of the body) and/or by maintaining the tie between feelings and events despite the apparent contradiction this creates. However, both of the *metaphors* used by ER in *The Kitten Story* referred to single, basic emotions (*angry* and *happy*). Both *metaphors* were simple constructs based on the sharing of attributes: *Really angry like a lion; Happy like a butterfly*. Neither required the use conceptual or psychological knowledge and neither was used in answers relating to Part 2 of the story which dealt specifically with ambivalent emotion. ER, instead of moving forwards towards the struggle and uncertainty of Level 2 moved back to Level 0 by “magically” having Snowball reappear: *No. No. The happy could come again when he sees the um..Snowball and they'll have () and then Billy will have two cats* (ER6).

ER was given a score of Level 1 because he was aware of contradictory feelings but not of the ambivalence that occurs when they are experienced together. When such awareness threatened to intrude and which would lead to the confusions of Level 2, ER simply denied its existence by re-working the story to avoid the emotional ambivalence altogether. Although typically developing children can show thinking at adjacent levels when their thinking is in transition, they did not show the extremes of ER who moved between Levels 0 - 3.

The scoring of ER's data is acknowledged as unsatisfactory because the data was not typical and did not sit comfortably within the model established by Donaldson and Westerman for language normal children. The disassociation between empathy and the cognitions of emotion found in the interviews for both stories did not occur in the data of the other SLI subjects or in the data of any of the typically developing children. It is not discussed in the work of Donaldson and Westerman or referred to as a possibility in the guidelines they give for scoring. This disassociation of feeling and thought (the

expression of feeling within a coherent explanatory model) was however consistent with ER as a child who presented with an intuitive, empathetic knowledge of emotion but without the linguistic skills (syntactic, including an ability to understand and use adversative conjunctions, and metaphoric) to express contradiction.

Causal theories of emotions

For both *The Puppy Story* and *The Kitten Story* ER obtained a Level 1 for his understanding of what causes emotions to change. Similar difficulties to those experienced in scoring ER's understanding of ambivalent emotions were encountered in scoring his understanding of casual theories of emotions.

ER showed little awareness of an ability to exert control over feelings states. In *The Puppy Story*, as with ER's understanding of ambivalent emotions, there was an empathetic understanding that Mike would experience feelings of sorrow for Pepper which would lead to forgiveness but no explanatory model for how this could occur. The two domains of understanding existed independently within the data. A number of ER's responses to questions relating to emotional causality were either *don't know* or unconvincing as part of a thought out model of how emotions work which would score a Level 0. ER's replies were usually in single words and he was not able to elaborate further when prompted. There was little to prove within the data that his replies were other than arbitrary.

Like ER's initial avoidance of ambivalent feelings altogether through his re-working of the story, ER also evaded the question of whether children have any control over their feelings. ER either ignored the idea of children in general or associated children specifically with Mike. A change in feeling state was linked to some form of reparation such as Pepper doing a painting for Mike and which would score a Level 1 (ER7). However, there was a mutuality involved in the idea of reparation whereby Mike also does something nice for Pepper (his writing). This suggested a need for mutual understanding and forgiveness and the fact that Mike also has a role in re-establishing the relationship with Pepper, the basis for his continued loving

feelings and which would be at a more mature level of understanding (Level 3).

The idea that Pepper could do some paintings for Mike or that Mike would do some work for the dog is reminiscent of the anthropomorphic responses sometimes given by children at Level 0 when Mike's loving feelings return only if Pepper repairs the damage done to the plane. A direct example of such a response is given in the Ambivalence Level Scoring Manual (Appendix 3 pages 598 - 599).

However, ER's use of anthropomorphism, while having the feel of a very young child, is not embedded in a coherent Level 0 model. The context is a more complex one of mutual forgiveness. In other words, as with the understanding of ambivalent emotions, ER demonstrated an intuitive or empathic understanding of feeling change which linked thoughts and memories, without the necessary explanatory model to support it. The Level 1 given to ER's data was therefore an unsatisfactory compromise, given that the disparity of his responses was again so atypical.

ER's responses to *The Kitten Story* were generally more consistent with Level 1 thinking. However, this may have reflected his poorer attention and decreased motivation throughout this session. ER's comprehension difficulties were evident during questions relating to what causes feelings to come and go. His replies were uncertain and increasingly random, lacking conviction.

When prompted, ER's responses were typical of that of a Level 1 child who believes that feelings come and go in response to external events and circumstances. A reversal in feeling states immediately follows upon a change in events (the new kitten doing some tricks: ER8).

ER was initially confused when he was asked if there is anything children can do to make their sad feelings go away. He appeared to think the reference to "children" related to characters in *The Kitten Story*. However once this had

been clarified by the researcher ER expressed uncertainty over the possibility of children exerting control over their feelings. A position consistent with Level 1 thinking (ER9).

ER was therefore given an overall score of Level 1 for his understanding of what causes feelings to change. However, it is acknowledged that the demands of the interview procedures were likely to have inhibited ER's ability to demonstrate his full knowledge and was thus an unsatisfactory method for use with this very language impaired child.

Social and emotional development and research findings

ER's social and emotional presentation showed similar extremes of ability and impairment as demonstrated in his responses to the structured interviews. Information obtained from Speech and Language Therapy case notes showed that as a young pre-school child ER had initially presented with no expressive language and no symbolic play skills. ER displayed severe tantrums and high levels of frustration affecting social interaction with adults and peers.

However, by the time ER entered the Language Unit he was described as a very sociable boy but with delayed play skills. ER was very interested in other children and observed their play. At 4 years 11 months ER was described by the Consultant Paediatrician as having *very good* play and social skills. ER attended a weekly social skills group and a weekly narrative group both run by Speech and Language Therapists.

Replies to the *Teachers'* questionnaire indicated that current to the research ER presented as a very happy and sociable child. Concerns were still expressed by his mother regarding social and emotional development which was sometimes at a pre-school level and sometimes mature for his age, depending on context and environment. She was unable to estimate his social and emotional age equivalence due to this variable presentation. There was a considerable difference in ER's teacher's assessment of his social interaction skills (no concerns recorded) and his mother's assessment (high level of concern) which may have reflected different expectations (see pages

355 - 356).

Information obtained thus presented ER as a highly social child curious about other children and their play but whose variable social and emotional presentation was consistent with the discrepancy between his intuitive appreciation of feelings and his inability to express that appreciation in a meaningful understanding of peoples' thoughts and behaviours.

Summary

- All 4 SLI subjects, JD, AB, GG and ER, demonstrated immaturities in their emotional thinking when compared to typically developing children of a similar chronological age.
- The degree of emotional immaturity identified by the research protocols was consistent with information obtained from parents and teachers.
- The degree of the SLI child's emotional immaturity was related to the severity of their language impairment. GG, the least language impaired subject, presented with the strongest overall emotional profile. AB, who had the weakest expressive language skills, presented as the most consistently emotionally immature child.
- Evidence from GG's good expressive language skills and AB's good receptive language but poor expressive language skills suggests that the level of expressive language was a better indicator of the subject's level of emotional maturity than was the level of receptive language.
- Expressive language, it was argued, is necessary for the development of "inner speech" and the child's ability to construct and reflect on the emotional narrative and develop an explanatory model (argument/rationale) to account for ambivalent emotion.

- The ability to identify and resolve emotional ambivalence represented a particular area of difficulty for the 4 SLI children. Out of 8 possible emotional ambivalence scores only 2 were at Level 2. Level 2 thinking requires the child to acknowledge ambivalent emotions are experienced at the same time. Language normal children typically resolve the resulting contradiction by using *metaphor* and separate the emotions spatially in the body. Of the 3 SLI children who presented with some awareness of emotional contradiction (JD, GG and ER) 2 (JD and ER) sought either to deny the emotional experience of contradictory feelings (JD) or evade the emotional contradictions altogether (ER's persistent reworking of the stories). Only GG who was the one subject who presented with age appropriate receptive and expressive syntax was able (using picture supports) to revise and develop his understanding of ambivalent emotion from Level 1 to Level 2. ER was the only other SLI subject to achieve a Level 2 score (*Puppy Story*). However, his understanding and use of forgiveness in this story was another way of evading, rather than resolving, the emotional consequence (negative/confusing feelings) of the protagonists' relationship.
- It was argued that the SLI subjects' difficulties with emotional ambivalence were linked to their difficulties understanding and using adversative conjunctions which express contradiction. GG was the only SLI child who did not present with such language difficulties.
- The understanding of what causes emotions to change was an easier task for the SLI children, generating fewer atypical responses than that of resolving ambivalent emotions. An understanding and use of adversative conjunctions would not be necessary for this task.

Conclusion

Examination of the SLI children's responses to the structured interviews provides evidence that language impaired children present as emotionally immature and that the nature and degree of the immaturity is related to the nature and severity of the language impairments. However, there is also evidence that current language skills alone cannot predict emotional maturity/thinking.

ER presented with some of the weakest language skills of any of the 4 SLI subjects and yet he also provided some of the most emotionally mature insights into the emotional relationships in *The Puppy Story*, expressing some awareness that the protagonists would resolve their differences and Mike come to terms with his current feelings. What ER was unable to demonstrate was any understanding of *how* or *why* this might occur.

The protocols established by Donaldson and Westerman were designed to elicit the child's thinking about complex emotions; specifically the theoretical model the child was using to detect and resolve contradictory emotions. ER's ability to construct such a model was, like JD's and AB's, severely restricted due to his impaired language skills. Yet ER's intuitive awareness remained. This awareness was not present in the data of JD and AB.

This discrepancy between the three most language impaired subjects might be explained by reference to their early play history and development of social interaction skills. All three had presented as pre-school children with severe difficulties establishing social interactive play. Only ER was noted as having made significant progress in this area as a young child. AB's continuing difficulties with social interaction with peers was frequently mentioned in case notes and at the time of the research he was regarded as a socially vulnerable child who had been given work in the school library to avoid the necessity of interacting in the playground at break and during lunch. JD was also described as a child with poor self esteem who was experiencing difficulties with peer relationships. ER however was described as a very sociable child who sought out children to interact with.

Children's early social play skills, especially role play, may be crucial for establishing and developing the ability to imaginatively project the self into that of another to experience an emotion from the protagonist's perspective. This establishes the psychological perspective required for the creation of empathy and the ability to experience and reflect on the meaning of an emotion for another individual. The skills required by the experimental procedures. Both JD and AB maintained an external perspective during questioning about the two stories. Only ER used *mental role play* and indicated some awareness of the protagonists' internal emotional experience.

No information was available regarding the development of GG's early play skills. GG's mother considered he had a number of friends. However, his class teacher expressed concern at his lack of interaction with peers in class and poor peer friendships. Although GG had not used *mental role play* he had articulated the fact that you have to *imagine* what someone is feeling. He was also able to revise and extend his thinking appropriately when given picture supports. This suggested that he had sufficient linguistic and cognitive skills to develop a more age appropriate understanding of contradictory emotions which may not have been experienced and learnt through social play.

The next section discusses the SLI children's difficulties with understanding same valence emotions. Although children's understanding of same valence emotions was not one of the original aims of this research the results obtained from the SLI subjects provided additional information on these children's emotional immaturity when compared with typically developing children. This data also suggests further reasons why impaired language skills may underpin this immaturity and the part played by young children's role play.

4. A discussion of the SLI subjects' difficulties in understanding same valence negative emotions (*sad/angry*) in Part one of *The Kitten Story*.

The role of language and semantics in differentiating negative emotion concepts

The structured interview for Part one of *The Kitten Story* questioned children about their ability to identify and understand multiple, negative emotions (sadness and anger) experienced at the same time by Bill, the story protagonist. Numerous developmental research studies have found “fuzzy boundaries” in the semantics of emotion words which occur across cultures and can persist into adulthood (Fehr & Russell, 1984; Russell & Fehr, 1994). Russell and Lemay, reviewing the literature in 2000, concluded that emotion concepts are the result of a highly constrained developmental process. The child is born experiencing emotion along the bipolar dimension of pleasure-displeasure and is then guided by experience, observation, language, and the folk theory of the surrounding culture to increasingly differentiate and label individual feelings.

Russell and Lemay stress the role of language and especially the part played by parents and others in labelling and interpreting the young child's own emotions. (See also Dunn & Munn, 1985; Dunn et. al., 1987; Dunn, Brown & Beardsall, 1991; Brown & Dunn, 1992; Denham, Cook & Zoller, 1992; Shatz, 1994). Children gradually acquire their culture's emotion terms for, rules about, and accumulated knowledge of, feeling states which then contribute to their theory of emotion (Manstead, 1995; Russell & Lemay, 2000). Bullock and Russell (1984, 1985, and 1986) and Denham (1998) all found that pre-school children often confused negative emotions (anger and sadness) and were more likely to have “fuzzy borders” for negative emotion concepts. Denham (1998) noted a developmental trend in young, typically developing children's ability to identify the salient emotion appropriate to a situation: happy situations followed by sad, angry and lastly fearful situations.

The effect of development (age) and SLI on children's understanding of multiple same valence negative emotions

Both the SLI data and the 7 – 8 year old language normal children's data provided examples of subjects' experiencing difficulties in differentiating sad/angry feelings in part one of *The Kitten Story*. However, the SLI children's difficulties in this area were more extreme than those of the typically developing children. This was despite the SLI children easily identifying and naming facial expression cards as part of the research protocols before listening to the story, and also despite having these facial expression cards in front of them when responding to the questions. The typically developing children in the replication study had no such picture supports.

The results presented in this current research suggest that the confusion between negative emotions found in pre-school children persists in typically developing school age children, at least until the ages of 7 – 8 years. This could in part be due to the more complex nature of the experimental task used in this study where the older, school age children, were being asked to think about someone experiencing multiple emotions, rather than just considering one emotion at a time.

Evidence for this was provided by this present research. JD (13 years 2 months) was able to show understanding of same valence emotions. In typically developing children the ability to acknowledge that two (non contradictory) feelings could be experienced simultaneously is usually established by 9 years of age (Harter, 1983; Westby, 1999). This is well within JD's chronological age and also the emotional age given by his mother (8 - 9 years). It is in advance of his language age equivalents suggesting that identifying multiple same valence emotions is not as linguistically demanding as understanding and resolving ambivalent emotion. This is reflected in the ease with which JD used *metaphor* to express his conceptualisation of same valence emotions (2 out of the total of 3 *metaphors* used by JD). It is also in contrast with the difficulties JD experienced conceptualising his understanding of the contradictory experience of ambivalent emotions (see earlier). This provides additional evidence that the ambiguity of contradictory emotions

continues to pose specific difficulties for older children like JD with impaired language development.

The 7 – 8 year old typically developing children were below the chronological age at which normally developing children are expected to understand simultaneous non contradictory emotions (9 years). The three SLI children (AB, GG and ER) achieved language age equivalents, and were given emotional age equivalents by their parents, which were also below the 9 year old age limit. It is not surprising therefore that these younger typically developing children and the three SLI subjects experienced difficulties acknowledging and differentiating between Bill's simultaneous same valence emotions (*sad/anger*). This is especially likely given Denham's (1998) development trend which indicates that negative feelings are more difficult to assign than positive ones for typically developing children.

Nevertheless the three SLI subjects did present with more extreme difficulties than the (chronologically) younger typically developing children, even when they were provided with picture supports. The SLI subjects' difficulties found in this present research are supported by other studies suggesting that even the ability to infer single basic emotions elicited by specific social situations, may develop more slowly in language impaired children, even when those children demonstrated good comprehension of the story events (e.g. Spackman et al. 2006 a).

SLI children's difficulties identifying emotional valence

Ford and Milosky (2003) probed young kindergarten aged language impaired children's ability to make causal inferences about the emotional states of others (e.g. understanding that a character losing a toy would feel sad). Scenarios used elicited single basic emotions (*happiness, surprise, sadness, anger*). Although these language impaired children could identify emotions depicted in line drawings of facial expressions, they had significantly more difficulty inferring the expected emotion when compared with language normal peers. What is of special interest here is that the language impaired children made far more errors of valence than the typically developing children (53%

vs. 19% of the time).

Spackman et al. (2006 a.), reviewing this study, speculated that older language impaired children might more accurately infer the correct valence of the emotion, but would still have difficulty understanding the specific emotion expected. For example, they might not confuse happy with sad, but they would have more difficulty distinguishing between sadness and anger. This present research supports this. However, in addition this present research found that when the identification of negative emotion was embedded in a more complex task (discriminating between and defining negative emotions) valence error again occurred. Both AB and GG fell back on contrasting opposites (sad/happy) when seeking to differentiate sadness and anger (see Results). Miss-processing the valence of another's emotions or, as found in this present research, not being able to correctly keep track of the valence of multiple emotions, could have serious social consequences and may play a part in the interaction difficulties frequently observed in language impaired children.

The role of semantics in differentiating same valence negative emotions (this research)

For LA and JB, two of the 7 – 8 year old typically developing children in the replication study, the semantics of the emotion words were an important way of differentiating them. LA contrasted sad/upset with angry/cross, implying anger is a somewhat more intense emotion (*a little bit more than upset*), while JB had explicitly stated that sad is not a word in the same semantic field as *mad* (angry): JB: *'Cos sad is not a word....like when you get really mad and....um...start to like wreck stuff.*

AB, one of the SLI subjects, like LA correctly used angry and cross as synonymous: AB: *Ah yes..uh..like he'd be re'..he'd run down stairs really angrily..... And that he'd..e'..e'..e' he'd really..get really cross that he could find..he looked for weeks and weeks and he couldn't find it.* However, unlike LA but like the other two SLI subjects, AB was unable to use any meta-semantic knowledge to begin to differentiate the two emotion concepts

(sad/anger).

All four of the language impaired subjects' understanding of synonyms was within the average range for their age. The three SLI subjects who experienced difficulties with same valence emotions (AB, GG and ER) appeared to over identify the similarities of the emotion concepts (the negative quality of sad/angry) but experienced problems in distinguishing their differences. Sadness and anger were therefore treated as synonymous. Semantic confusions occurred because of problems acquiring subtle word knowledge relating specifically to the differences between negative feeling states.

This semantic confusion can be seen in AB's data. AB's responses throughout the interview showed that while he understood that angry and sad feelings are different emotions and feel different inside, when he thought about them and attempted to differentiate them they were conceptualised simply as negative emotion and become synonymous. When he was asked to contrast angry/sad he could only do so by making sad the same as angry (*cross* – thus *anger* appears to be the dominant negative emotion which overrides *sad*) and then contrasting anger with a positive emotion: happy. Personally AB knew that he experienced *sad* and *angry* as feeling different internally but his semantic knowledge of how to differentiate negative emotions, especially in others, was underdeveloped.

Further evidence of semantic and conceptual confusion of emotion words was found in GG's data. GG agreed that it was possible for Bill to experience multiple feelings (sadness and anger) but when he was asked to explain this it was noticeable that he had to be prompted to explain *sad* and then used the same (but inappropriate) syntactic structure to express sadness as for anger: *He could feel angry with himself. (R: Yeah. And what about feeling sad?) Um..sad with himself 'cos when he didn't shut the window.*

While it is common usage to talk about people feeling angry *at* themselves or *with* themselves it is not usual to talk about people *feeling sad with*

themselves. It is more usual to say *feeling sorry for himself*. Although this is a subtle distinction difficult for an SLI child, GG did on formal assessment have syntactic skills within the average range for his age and the error, combined with all the other confusions of sad and angry suggests a semantic difficulty rather than a difficulty with syntax. GG's use of syntactic convention associated with the concept of anger for the emotion sad indicates his underlying difficulties in differentiating semantically between the two emotions.

This semantic difficulty was again seen when GG was asked if angry and sad are the same and he created an unusual metaphor to express the emotional experience of feeling *angry* and *sad*: *Well yeah sort of balanced I would say*. Not only does GG agree that *anger* and *sad* are the same feeling but the meaning of *balanced* suggests harmony and equality which is contrary to the emotional experience of these two feeling states. Thus although GG's spontaneous use of a *metaphor* showed a sophisticated way of thinking about the feelings angry and sad and how they are experienced, the conceptualisation of the two emotions is unusual. This is in contrast to his more language typical *metaphors* when thinking about contradictory emotions.

The idea of balance also suggests being poised midway between two feelings states with neither exerting a particular influence or effect. Although the data from the language normal children is limited due to the small number of subjects in the replication study, none of them thought of the emotions *angry* and *sad* as the same and cancelling each other out. Neither, Lakoff and Johnson (1980); Sweetser, (1990) or Kovecses (2000) who looked at cultural and cross cultural conceptualisation of feeling states and the metaphorical and cultural aspects of semantic structure, especially relating to anger, give examples of this type of understanding or metaphoric expression for experiencing different feeling states. It is however similar to other language impaired children's atypical conceptualisation of the emotional content of feelings. For example JD's concept of ambivalent feelings being *in the middle* and *OK* or *normal* and AB's expression of happy as *normal*.

It is important to note that GG's only difficulties with language identified by

formal assessment related to aspects of semantic knowledge (*Semantic Relationships* and *Word Classes*). GG's difficulties with same valence emotions had been surprising given his more advanced (although still chronologically immature) thinking about complex ambivalent emotion. However, this would be understandable if the task relating to identifying same valence emotions was closely linked to semantic and conceptual development. (JD, the SLI subject who coped well with same valence emotions, had achieved a stronger receptive semantic profile than GG with only *Word Classes* below the average range for his age. JD's conceptual development had been age appropriate).

Given the role played by language it is not surprising to find in the data presented in this study that semantic and conceptual confusions continued for far longer in the SLI children. What is perhaps surprising is that it persisted to such a degree even with the considerable amount of social skills intervention experienced by three out of the four SLI subjects. (Only GG had not been received any intervention to support and develop social skills). This is explored in more detail in Chapter 5.

Non-semantic reasons for SLI children's difficulties discriminating same valence negative emotions

There is evidence from both the typically developing children in the replication study and the SLI children regarding the importance of the role of semantic knowledge in differentiating same valence emotions. However, 7 – 8 year old typically developing children's semantic skills would by definition be age appropriate, yet they also experienced problems keeping track of the differences between same valence negative emotions. This was in part explained by the more complex nature of the task presented in this research. It does not however, explain why an SLI child like AB should present with such extreme difficulties. On formal assessment those subtests which assessed AB's semantic system were all found to be within the average range for his age (*Semantic Relationships*, *Word Classes*, *Word Association*, *Multiple Contexts and Synonyms*). However, AB's difficulties with same valence emotions appeared more profound than those of the chronologically

younger typically developing children. This suggests that the semantics of emotion may represent a specific difficulty for SLI children.

It is suggested that processing difficulties together with impoverished early role play may account for some SLI children's continuing problems discriminating same valence negative emotions. A number of studies have put forward the theory that language disorders are secondary to limitations in processing capacity (e.g. Gathercole and Baddeley, 1990; Tallal et. al., 1996; Bishop, 1997; Leonard, 1998; Bishop et. al., 1999). Gillam and Hoffman, 2000, showed that SLI children seem to have limitations that disrupt language processing, particularly when stimuli are presented rapidly, which is likely to be the case with emotional stimuli. Limitations in processing may affect the ability of a child to differentiate increasingly subtle information from a range of sources other than the purely linguistic.

In order to discriminate between emotions a young child would need to process and store a variety of information relating to the visual (facial expression, observable behaviours including body language); the auditory (e.g. tone of voice) and, in regard to the self, the physiological (internal physical responses such as heart rate). This would be in addition to any verbal information provided by, for example parents and others, as well as the child's own evaluation and judgement regarding the context in which the particular emotion is embedded (the triggering event or situation). SLI children with slow or impoverished processing skills, or difficulties integrating information (consistent with the emergent theory of language acquisition see, Evans, 2001), would be seriously disadvantaged in such tasks. This could account for the high number of valence errors made by preschool SLI children in Ford and Milosky's 2003 study, even for these basic single and oppositional emotions such as sad/happy.

Differentiating same valence emotion would be even more taxing of children's processing skills since differences become increasingly more subtle. Awareness of the non linguistic subtleties was touched on by one of the language impaired subjects, ER, referring to the facial expression cards and

commenting that the angry face had two frowns on it and the sad face had none. The problem for SLI children is that to acquire good age appropriate knowledge of emotion they would have to process and integrate multiple sources of information at speed. Lack of such knowledge could then result in semantic deficits specific to emotion concepts.

A number of studies have shown language impaired children to have problems processing non-linguistic aspects of emotional understanding. Spackman et al. (2006 b) found deficits in primary school aged SLI children's basic ability to identify facial expressions which were either same valence (e.g. identifying disgust as anger) or required more subtle differentiation (e.g. identifying surprise as disgust).

Boucher et al. (2000) used older primary school children with SLI as controls in a study designed to examine the voice processing abilities of children with autism. Children were asked to match the voice of an actress speaking the days of the week or months of the year to express a specific emotion (e.g. happiness) with photographs of facial expression of emotions. The study unexpectedly found that the children with autism performed *better* than the children with SLI. Neither of the groups performed as well as the typically developing children.

Trauner et al. (1993) found that language impaired children aged 9 – 13 years could identify facial expressions of happiness, sadness and anger as accurately as typically developing chronological age-matched peers. However the language impaired children had more difficulty than the controls in identifying which of the three emotions was being conveyed by an actress reading short phrases (e.g. "There he is") with a happy, sad or angry tone of voice.

Such research studies suggest that some language impaired children have difficulty with very basic aspects of emotion understanding which may not be entirely attributable to limited language. This may account for AB's poor understanding of single basic emotions as well as same valence emotions,

and yet age appropriate scores on formal tests of semantic and conceptual ability.

Noveck et al. (2001) found that in a reading task with typically developing children (9yrs, 11yrs, 14yrs) and adults, synonymous controls consistently required shorter processing time than metaphoric references. Processing difficulties may thus account for AB's language profile which showed his understanding of synonyms (which is less demanding of processing skills) to be in the high average range (standard score: 12) but below average understanding of the more demanding figurative language (standard score 6), and a consequent lack of *metaphors* in his interview transcripts. (AB was the only SLI child to use no metaphors in response to the structured interviews).

It is argued by this researcher that the processing, linguistic and integration skills required for understanding emotion concepts are highly demanding of all children. One way in which typically developing children may seek to support their developing knowledge of emotion is thorough social role play and/or doll play in which the child takes on the character and role of a particular emotion/s. This would give the child opportunities to practise, rehearse and reflect on the wide range of attributes (verbal, tonal and visual) appropriate to different emotions and emotional situations. In support of this view, Kopp (1989) found that children talked about feelings in pretend play with others, and through this they began to understand more about how to deal with feelings, especially complex and/or difficult ones.

SLI children however would be disadvantaged in gaining and consolidating understanding of emotions this way. Numerous studies have found that language impaired children are at risk of failing to develop social interaction with peers and especially related to play in the pre-school years (e.g. Hadley and Rice, 1991; Rice, Sell and Hadley, 1991; Gallagher, 1991, 1993; Brinton and Fujiki, 1993; Craig, 1993; Rice, 1993; Gertner, Rice and Hadley, 1994). There is also considerable evidence supporting a relationship between play and language in normally developing children (e.g. McCune-Nicolich 1981; Corrigan 1982; Shore, O'Connel and Bates, 1984; McCune 1995; Lewis,

Boucher, Lupton and Watson, 2000) and in children with a variety of disabilities (e.g. Mundy et al. 1987; Beeghly et al. 1990). It is likely therefore that young SLI children would have far fewer opportunities, both in terms of play partners and play skills, to explore their emotional understanding through role/social play. Those language impaired children whose difficulties were related to poor processing or integration skills would be especially vulnerable to problems acquiring a full understanding of even single basic emotion concepts, and particularly the subtler aspects of emotional valence.

5. A discussion concerning the use of picture supports for *The Kitten Story*.

Only marginal differences had been found between the SLI children's performance for *The Puppy Story* and *The Kitten Story*. While overall the scores for the children's causal theories of emotions were slightly *higher* for *The Puppy Story* than *The Kitten Story*, the children's ambivalence level scores were very similar for both stories. It is not possible to say if the difference in scores that was found is significant due to the small number of subjects. What can be concluded is that there was no evidence to believe that the SLI children performed better on *The Kitten Story* than *The Puppy story*, although this is what might have been expected.

Why the SLI children might have been excepted to perform better on *The Kitten Story* than *The Puppy Story*

1. Use of picture supports. Picture supports had been provided for *The Kitten Story* both to illustrate the narrative and so improve comprehension, and to aid understanding of interview questions and the expression of possible answers. Pictures would support the children's auditory verbal memory and narrative sequencing skills. It might have been expected therefore that these supports would allow the SLI children to access and express a more mature emotional understanding for *The Kitten Story* than *The Puppy Story*.

Some evidence of SLI subjects finding the pictures helpful was found but only one subject (GG) used pictures to develop his thinking sufficiently to reflect a higher level score.

2. Order of presentation. The order of the stories was the same for all the SLI children, that is *The Puppy Story* was always presented first and *The Kitten Story* second. This could have produced better scores for *The Kitten Story* because children were likely to be less nervous in the second session

and because they had already heard the interview questions once in the interview for *The Puppy Story*.

Reduced Anxiety Levels

Children were more likely to be nervous in the first session, when *The Puppy Story* was presented, because they did not know what to expect. Given the SLI subjects' fragile listening and attention skills and impaired language development anxiety could have had a more profoundly adverse effect on these children's performance than on those of the typically developing children where no effect of story order was shown.

Possible evidence of increased anxiety levels for this first session was found for two of the four SLI subjects. JD thought he was to have an injection as part of the research procedures. It was only at the end of the first (*Puppy Story*) session that the researcher realised this and was able to reassure him that this would not happen. GG appeared more anxious during *The Puppy Story*. Mrs. G (mother) when viewing the videos spontaneously commented that GG appeared very nervous in the first *Puppy Story* session and much more relaxed in the second *Kitten Story* session.

Repetition of Interview Questions

Evidence from ER's data suggested subjects were helped by hearing the interview questions for a second time for *The Kitten Story*. As ER listened to Part one of the taped story he picked out and held up the two facial expression cards which related to how the story protagonist was feeling at different points in the story, and which answered the first question of the interview: *How does Bill feel?* ER did this *before* the question was asked suggesting that he had remembered the procedures from the first session and the type of questions that had been asked.

Possible reasons why the SLI children performed no better on *The Kitten Story* than *The Puppy Story*

1. SLI children did not attend to the picture supports provided. Video of the SLI subjects showed that all four children paid close attention to the pictures provided and frequently scanned the story pictures before replying to questions. For example, one subject (AB) used imagery from the narrative pictures to support his answer to interview questions (the use of the sign # depicted on one of the story cards when answering how Bill would feel about the new kitten: *But it wouldn't equal the same as Snowball*).

2. Pictures confused or detracted from the children's ability to express themselves. A further possible explanation of the slightly lower scores for *The Kitten Story* is that the pictures used to support the interview questions confused or detracted from the children's ability to express themselves. The visual designs used to support the children's understanding of the interview questions may not have matched the way in which these SLI subjects conceptualised emotion. However, two SLI subjects, JD and AB, both made comments at the end of *The Kitten Story* either directly stating or implying that they had found the interview easier with the pictures.

In addition, no evidence of alternative, but effective, ways of conceptualising emotion which were different to that of typically developing children were found in the SLI transcripts for *The Puppy Story*. Also none of the SLI subjects chose to use the pencils and paper offered to draw their own responses to the questions. This is in spite of the fact that two subjects (AB and GG) were regarded as having above average drawing skills for their age.

3. Differences in the two stories negated the supportive effect of the pictures. Analysis of the two stories had revealed differences in the complexity of the sentence structures and the use of conjunctions, with *The Kitten Story* being the more complex of the two. In addition, both parts of *The Kitten Story* were found to be longer than those of *The Puppy Story*. *The Kitten Story* also had a more complex temporal framework and narrative

structure than that of *The Puppy Story*. Bill's negative feelings in *The Kitten Story* were conveyed not only through Bill's actions but also his thoughts and spoken comments which required more complex sentence structures than in *The Puppy Story*. (See Chapters 2 and 3). The added syntactic and narrative complexity of *The Kitten Story* could have represented an increased level of difficulty which affected the SLI children's ability to score on the experimental tasks, even with the added support provided by the pictures.

Possible evidence for this could be seen in the SLI children's re-telling of *The Kitten Story*. On formal language assessment AB, JD and ER, all experienced significant difficulties with conjunctions and especially adversative conjunctions. All three of these subjects failed to refer to any possibility of negative feelings associated with the new kitten in their re-telling of the story. This undermined the basis of Bill's ambivalent emotion. All three subjects achieved only a Level 1 for their understanding of emotional ambivalence.

GG was the only SLI subject who achieved age appropriate scores for tests of receptive and expressive syntax. GG was the only SLI subject who in his re-telling of the story alluded to Bill's on going relationship with the missing Snowball and thus the foundation of Bill's ambivalent feelings. GG scored a Level 2 for understanding ambivalent emotion.

It is a moot point as to whether the re-telling of Part two of *The Kitten Story* by AB, JD and ER and their omitting of the possibility of ambivalent feelings represents a syntactic difficulty with the text or a cognitive/psychological difficulty in dealing with contradictory feelings. Their re-telling could be seen as a strategy for avoiding emotional ambivalence and a sign of their underlying emotional immaturity and is consistent with younger or less mature children's re-telling of the story as identified by Donaldson and Westerman.

In support of this psychological interpretation it should be noted that AB, JD and ER simplified the *psychology* of *The Kitten Story*. Their re-telling did not appear to be confused because they lacked comprehension of the story

because of its greater linguistic or cognitive complexity, or because its expression required more complex linguistic skills.

In addition, AB and JD's responses to probe questions which explicitly recalled the possibility of negative feelings were consistent with their own re-telling of the Part two of the story and the Level 1 responses typical of language normal children. There was no evidence that the complexity of *The Kitten Story* had therefore masked their more mature understanding of emotional ambivalence which could then be elicited by the interview questions using picture supports.

ER, the subject with the most pervasive language impairment, was the subject who most persistently re-worked the story to specifically avoid negative feelings and thus the possibility of ambivalence, both in his re-telling and his replies to questions. However, this avoidance of negative emotion was also present in *The Puppy Story* and therefore supports the argument that its basis was psychological rather than purely linguistic. That is, the SLI children's avoidance of negative emotion in *The Kitten Story* was a symptom of their psychological immaturity (due to their inherent linguistic deficits and seen also in response to *The Puppy Story*), and not a lack of linguistic comprehension of *The Kitten Story* per se.

4. SLI children's responses to *The Puppy Story* and *The Kitten Story* represent their emotional understanding which was not affected by their inability to understand the stories or interview questions or to verbally respond to those questions.

Since the SLI subjects obtained slightly better or similar scores for *The Puppy Story* it could be concluded that the use of pictures for *The Kitten Story* did not compensate SLI children's receptive and expressive language deficits, allowing them to access a level of emotional understanding denied expression because of their poor language skills.

Two of the four SLI subjects (JD and AB) showed some evidence that the pictures helped refine a few of their responses to *The Kitten Story* (see

comments on individual language profiles). However the overall effect of this was marginal. In other words the pictures helped them express themselves a little better but they did not extend their thinking or reveal a depth of emotional understanding which had not been accessed in *The Puppy Story* due their receptive or expressive language difficulties.

GG, who presented with the strongest language profile, was the only SLI subject whose data did show some effect of the picture supports sufficient to affect his thinking about emotional ambivalence and demonstrate a more mature understanding of *The Kitten Story*. GG pointed to pictures to support his expressive language and used the visual representation of Bill thinking about the two kittens to revise his answer to the time question (*Does Bill feel happy and sad at the same time or first one and then the other?*) changing it from *first one and then the other* to both *at the same time*.

However, GG was the SLI subject who came closest to the 7 – 8 year old language normal children's use of cognitive-linguistic devices (use of *metaphor*) in *The Puppy Story*. His responses to *The Kitten Story* represented a clarification of his thinking about ambivalent emotion rather than a fundamental change in that thinking. The point is that unlike the other SLI subjects GG's thinking about emotion was already at a sufficiently mature level to allow him to make use of the pictures provided.

The next chapter summarises the findings of the three research studies and places them in context with current thinking about emotion and children's developing theory of mind. The validity of the findings for both typically developing and language impaired children are considered. Clinical implications for language impaired children are outlined as well as possible directions for future research.

CHAPTER FIVE

CONCLUSION

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Aim of research and findings

This research adopted the model of emotional development and the research methodology of Donaldson and Westerman (1986). These authors established through their research that the understanding of what causes emotions to change and the ability to resolve contradictory emotions is gradually established during middle childhood in language normal North American children (7 – 11 years). This present research confirmed that similar results could be demonstrated for language normal British children (study 1).

The main aim of study 2 was to identify specific language and cognitive skills required by typically developing children for their emotional maturation by comparing their performance on experimental tasks relating to two types of ambiguity: emotional and linguistic. The task of emotional understanding was then repeated with language impaired children in order to detect differences in their performance from that of the language normal children (study 3). These differences were then discussed in terms of the SLI children's language deficits. The research findings presented in this thesis form part of a wider and more complex investigation into the extent to which linguistic deficits could be directly contributing to emotional and behavioural difficulties identified in a number of recent studies of SLI children.

Research Findings: Language Normal Children

Answering questions on the stories containing the two types of ambiguity elicited the use of five cognitive-linguistic devices:

- *mental role play*
- *metaphor*
- *mime*
- *personal experience*
- *folk psychology*

The following were found to be specific to the tasks of emotional understanding:

- The use of *mental role play* was highly correlated with the maturity of the younger children's emotional understanding; both understanding what causes emotions to change and contradictory emotions (7 – 8 years of age).
- *Metaphor* was the device most favoured by children when answering questions specifically probing their ability to identify and resolve emotional ambivalence (both age groups: 7 – 11 years).

Both tasks of ambiguity, emotional and linguistic, were highly demanding of children's expressive language skills. However, on the tasks of emotional understanding the girls' performance errors decreased with age while those of boys substantially increased. Girls were found to become more selective with age in their use of cognitive-linguistic devices.

Research Findings: Language Impaired Children

- The emotional understanding of the language impaired children was immature for their chronological age when compared to that of the language normal children.
- The emotional understanding of the three children with the most severe language impairments (JD, AB, ER) was not helped by the use of visual supports (pictures).
- The language impaired children experienced persisting difficulties describing or acknowledging the feeling content of emotions (how people look, act, and feel under the influence of emotion/s).

- Although the responses were immature, the language impaired children coped better with the questions on emotional causality than emotional ambivalence. The SLI children persistently either failed to identify, or sought to avoid, the contradiction of ambivalent emotion. This avoidance was greatest in those three SLI subjects with the most severe language disorders (JD, AB, ER). This may be linked with these children's difficulties with adversative conjunctions.
- Unlike language normal children the SLI children's most favoured device was *mime*. However the *mime* they used was less sophisticated than that of the language normal children.
- The language impaired children made little or no use of *mental role play* (one example only).
- The language impaired children's use of *metaphor* was atypical:
 - Unlike language normal children SLI children used the least number of *metaphors* when answering questions relating to emotional ambivalence.
 - Unlike language normal children the majority of the *metaphors* used by the SLI children related either to single, non complex emotions, or were used to avoid emotional complexity (ambivalence).
 - Unlike language normal children who used psychological *metaphors* mainly incorporating spatial imagery, the majority of the language impaired children's *metaphors* were used to describe observable emotional behaviours (rather than internal thoughts) using imagery based on external characteristics. (Usual at age 4 – 6 in typically developing children's language).

Reliability of findings

The reliability of the experimental findings is considered under three headings. Firstly the results of the language normal children are considered in relation to the original research predictions. These were established for language normal children after the replication study and before the start of the second study. To what extent were these predictions fulfilled?

Secondly, the identification of the cognitive-linguistic devices is considered. These had been identified and collated after the language normal data had been generated. They did not form part of the research predictions as their existence had not been hypothesised before the start of the second study. What evidence, if any, is there that the use of these devices can be generalised to the wider typically developing paediatric population when processing emotions?

Thirdly, how reliable are the findings of the SLI study?

1. Research Predictions

These can be found on pages 112 -113 of Chapter 3.

General prediction

- As predicted, results from the second language normal study strongly replicated the findings of the American study and the first British study for children's emotional understanding. Good agreement was found between the British raters.

Specific predications

- As predicted the older children scored at higher levels than the younger children for both the linguistic ambiguity task and emotional

ambivalence level task. The difference was greatest for the emotional ambivalence task, suggesting that this is a developmentally more difficult task than identifying and resolving linguistic ambiguity.

- As predicted it was found that the children in the younger age group (7 – 8 years) scored at higher levels for the linguistic ambiguity task than the emotional ambivalence task.
- As predicted the younger children (7 – 8 years) produced more Relation category discourse errors (illogical, incoherent or unintelligible responses) than the older 10 – 11 year old children. This occurred for both stories in all story parts. However, the numbers of errors for both groups of children were small. (See Results, Chapter 3).
- As predicted the discourse errors of the older 10 – 11 year old children were predominately in the Manner category (syntactic revisions, hesitations). However, this was also true of the younger 7 – 8 year old children.
- It was found that for both age groups marginally more expressive language performance errors (lexical, syntactic, semantic, phonological) were found for the emotional ambivalence task than the linguistic ambiguity task. This occurred across all domains apart from lexical in the older subject group. However, differences in the number of errors were very small. (See Results, Chapter 3).
- It had been predicted that the younger children would make more errors in total (discourse + expressive language performance errors) for both tasks than the older children. However, this was not found to be the case with the 10 - 11 year old children making more language performance errors than the 7 – 8 year old children. However, further analysis showed that this was related to gender differences which had

not been anticipated. The girls' error rate did decrease with age while that for boys substantially increased. (See Results, Chapter 3).

Implications for the reliability of research findings

All but one of the original research predictions were fulfilled, although the strength and therefore the possible importance of the findings were variable. Although by no means conclusive, the high level of agreement between expected findings and actual findings in the children's responses to the experimental tasks, endorses the model of emotional maturation put forward by Donaldson and Westerman together with the view that tasks of emotional understanding represent an area of particular difficulty for typically developing children.

The predicted high level of Relation errors in the younger children's data, which was based on findings in the replication study, was not found. Instead, the errors made by both age groups were predominantly syntactic. The consistency of this finding, with errors of syntax occurring in both discourse and expressive language analysis, does indicate that complex verbal reasoning tasks, especially those relating to emotional processing, is specifically highly demanding of school age children's syntactic development. It also suggests that measuring numerical and category differences in performance errors is a valid way of detecting differences in the cognitive demands of tasks, and how those demands might vary according to age and gender.

The gender differences in the error rate for the older subjects had not been anticipated. The American research and the first and second studies in this British research found no differences in boys' and girls' emotional understanding. Differences identified related to the older boys' ability to effectively express their understanding, including their less efficient use of cognitive-linguistic devices.

However, other research studies have consistently found gender differences in a wide range of tasks and abilities related to this present research, namely

communication skills and emotional processing. In studies of clinical populations it has been found that many communication impairments have a male bias. This can range from the incidence of speech and language impairments and conditions such as autism to paediatric and adult stammering (reported in Nicoll, 2006).

Non-clinical language studies have also revealed gender differences. Miller (2000), reviewing sex differences in human mental abilities found that women typically show higher average verbal ability while men show higher average spatial and mathematical ability. For example, women comprehend more words on average, and this sex differences accounts for almost 5% of the individual variation in vocabulary size (Aitchison, 1994; Miller, 1996).

In emotion research, a large number of studies are convincingly indicating that both emotional expression and gender have complex interacting biological, social and cultural roots which could account for found differences (Brody and Hall, 2000). In three non-overlapping reviews of gender differences in the accuracy of decoding nonverbal cues, Hall (1978; 1984; Hall et al 2000) concluded that females are more able than males at identifying affect from non-verbal cues of face, body and voice, with the possible exception of anger. In at least 80% of all retrieved studies females scored higher. Most notable was the finding that gender difference was relatively invariant across the gender of the stimulus person, tasks, different ages of the subjects being tested, and cultures. Females were also found to have more knowledge than males of social scripts and norms (e.g. display rules) and knowledge of others' needs conveyed via non-verbal cues (Hall et al 2000). In studies of empathy women were more likely than men to "mirror" the emotions of others (Doherty, 1997).

In developmental studies, girls have been shown to have higher levels of sociability, and faster maturation rates for self-control processes and language development (see Maccoby, 1998 and Brody, 1999). Placed in the context of this body of evidence relating to gender, communication, language and emotional processing, the findings of this current research for older boys,

while originally unpredicted, are not necessarily unlikely or unexpected. What was perhaps both surprising and important was that the gender difference in this study related so specifically to performance rather than competence.

2. Language Normal Children's Studies (cognitive-linguistic devices)

Good - very good levels of agreement were found between raters in the detection and identification of cognitive-linguistic devices. A high correlation was found between younger (7 – 8 year old) children's emotional maturation and their use of *mental role play*.

However, it is acknowledged that there was considerable individual variation in the children's use of these devices with a large range in the numbers used per subject. (See Results, Chapter 4 pages 404 - 405). It is worth considering therefore to what extent the use of the devices in this research may be common to all normally children or an anomaly of particular subjects participating in the study.

Cognitive-linguistic devices consistent with current Theory of Mind Studies

Reviews of theories of Theories of Mind (Introduction, Chapter 1) have identified four main theoretical bases (see Carruthers and Smith, 1996). Each of these provides support for the findings of this present research, including the use of the cognitive-linguistic devices identified in the children's transcripts:

- **theory-theory**

Children understand the minds of others (and their own) by virtue of possessing a theory of mind: a theory acquired by observation and hypothesis formation. The process is inherently developmental with children revising and re-creating their theories as they acquire more information and their cognitive and linguistic abilities develop.

- **modular-theory**

According to modularity theories, representations of the world (and minds) are not constructed from evidence in the course of development. Instead innate structures create mandatory representations.

Both of the above theories rest on children developing concepts about mental states. Whether these concepts are the result of actively evolving theories or a succession of innate modules is still open to debate. There is certainly good evidence for transitional conceptual stages in the child's developing theory of mind (see Gopnik and Wellman, 1994; Gopnik, Slaughter and Meltzoff, 1994).

The results of Donaldson and Westerman's (1986) research plus the findings of this present research, showing distinct stages in children's thinking about emotion, are consistent with this hypothesis driven and revisionist approach to children's developing psychological and emotional knowledge of themselves and others. Language development, such as the understanding and use of increasingly complex conjunctions, and the development of psychological *metaphors*, plus the child's maturing cognitions such as increased processing capacity, would provide the changing context (and possible triggers) for these evolving theories or successive modules.

- **simulation-theory**

The child (and adult) understands the minds of others by imaginatively projecting himself into their situations and using his own mind as a model of theirs. Running his/her own mental states "off line", s/he is able to simulate the mental processes of another, and thereby to learn, for example, what they will do or feel.

This theory is strongly dependent on the role of imagination and empathy (Heal, 1986, 1994, 1995; Gordon, 1986; Harris, 1989, 2000; Goldie, 2000,

2002). The idea that children imaginatively project themselves into the minds of others in order to access their present and future thoughts and feelings is consistent with the use of *mental role play* found in this present research. It is also consistent with the complexity of the *mime* used by the typically developing children where the child enacted the emotional behaviours or actions of the story protagonist as a prelude to, or in conjunction with, answering questions about that character's possible thoughts, feelings and actions.

Harris (2000) specifically looked at how typically developing 6 year old children identified with the emotion of a character in a story. Those children who were encouraged to become involved with the character were more likely to report empathy with the protagonist's emotional state and report strategies such as pretending that the story events were happening to them, or to someone close to them, or they linked the story events with a similar experience of their own.

The cognitive-linguistic devices identified in this research with 7 – 11 year old children such as *mental role play*, complex narrative *mime*, *personal experience* and *folk psychology*, which helped them answer complex questions concerning the emotional state of a story protagonist, would be consistent with those earlier cognitive strategies reported by Harris' 6 year olds.

- **social-constructivist theory**

This is the process of enculturation. During their early years children acquire language and gradually come to understand the social rules within their culture via the comments and behaviours of primary care givers and close others. (See Astington, 1996).

In this present research children used *folk psychology* and *personal experience* (of social and emotional situations/events) to evidence their

replies to questions about the thoughts, feelings and actions of story protagonists. Although small in recorded numbers, overall the use of *folk psychology* and *personal experience* increased with age. This supports the view that children develop and refer to a growing body of knowledge about their particular social and cultural environment when considering the possible thoughts and feelings of others.

Cognitive-linguistic devices consistent with language development and cross cultural studies of emotion

The children's use of the cognitive-linguistic device *metaphor* was consistent with language development studies of metaphoric expression. Children 7 years plus were beginning to create psychological *metaphors* to help them cope with and express their growing awareness of the inherent contradiction of ambivalent emotion.

In addition, the types of *metaphor* created by the older children appeared to be moving towards the adult model of conceptualising anger identified in a number of cross cultural studies (the body as a container and the emotion as a fluid or gas within that container). See Discussion, Chapter 4 pages 457 – 458.

3. Results from SLI Children's Study

The cohort of language impaired children was small in number and the findings of this study will require further verification by exploring the responses of a larger number of children with varying profiles of language difficulties. (See also Chapter 4, Results page 380 for validity of SLI findings).

However, the parent interviews and parent and teacher questionnaires used to provide information on the children's current social and emotional functioning did show a high level of agreement with the experimental results. Experimental findings were also consistent with strengths and weaknesses identified in the children's individual language profiles.

Another factor in the reliability of the SLI result is in their similarity to those of the typically developing children in both the American and this British research. All the responses of the language impaired children could be matched to profiles provided by the American researchers even when as in the case of ER, those profiles related to widely differing stages (“levels”) of emotional understanding. In addition, and acknowledging qualitative and quantitative differences, all the cognitive-linguistic devices found in the typically developing children’s data were identified in the language impaired children’s transcripts, with the possible exception of *personal experience* (a device likely to develop in older/more mature children).

These similarities identified in a clinical population endorse the view that the findings of the language normal study are representative of the skills all children require for the experimental tasks, namely emotional understanding relating to ambivalence and causality.

In addition, the similarity of the language impaired children’s responses to that of language normal children provides evidence that their emotional immaturity is not the result of additional conduct disorders i.e. their emotional thinking is typical but immature rather than deviant. Atypical results e.g. of *metaphor* are consistent with the child persisting in less advanced thinking due to language deficits such as delayed use of complex conjunctions while other language skills such as figurative language develop relatively intact.

Critique of Methodology

An initial evaluation of the American research methodology was given after the British replication study (Chapter 2, Discussion page 75). This section considers the adapted methodology and how well it served the purpose of this present research, both for typically developing and language impaired children. Secondly, the usefulness of Donaldson and Westerman's methodology is considered when applied to a clinical, language impaired population.

Critique of adapted methodology

1. The language normal study compared two types of ambiguity: linguistic and emotional in order to identify specific cognitive-linguistic abilities required for the detection and resolution of contradictory feelings. To what extent can these compared categories of ambiguity actually be considered similar?

The responses of the language normal children to the structured interview designed to elicit their knowledge of pronoun confusion (linguistic ambiguity) did fall into easily identified stages of knowledge which were based on Donaldson and Westerman's model for emotional understanding. The children developed in their ability not only to detect linguist ambiguity but to resolve the resulting confusion using increasingly sophisticated meta-linguistic skills demonstrating logical reasoning. Both tasks required the children to resolve either the intellectual or emotional anxieties created by the ambiguousness of the stories. For both these tasks the children presented as creating predictable explanatory models to accommodate these underlying anxieties.

2. The introduction of video recording allowed inter-rater reliability measures to be incorporated into the procedures. This was important for non-verbal behaviours especially *mime*. Videoing allowed for the qualitative evaluation of *mime* which revealed differences between the language normal and language impaired subjects.

3. The analysis of discourse errors and expressive language performance errors was sufficiently sensitive to reveal both gender and task differences linked to the complexity of the interview questions. Good inter-rater reliability measures indicated that the test examples provided enabled an accurate identification of different error patterns. Results obtained suggest that the analysis of typically developing children's language performance errors is a useful way of indicting differences in the cognitive and linguistic demands of experimental tasks.

4. The parents' and teachers' questionnaires and interviews provided good agreement on the language impaired children's social and emotional functioning and corroborated experimental results. No information had been obtained from the language impaired subjects themselves and self reporting measures could be incorporated into future studies. This could be used to evaluate the children's own awareness of their social and emotional presentation and if they felt that their responses to the stories allowed them to accurately demonstrate their emotional understanding.

Two questionnaires were not completed, one by a parent and one by a school. It is not possible to say why this occurred. Larger studies may wish to consider this further and possibly look at the length of questionnaires and parent literacy levels.

5. The use of the two language assessments (*CELF UK 3* and *TOWK*) proved useful in assessing different aspects of the same skills e.g. in the area of semantics: the categorisation of semantic classes, the ability to understand semantic relationships between words at sentence level and the understanding of synonyms. This allowed for detailed investigation of the relationship between the subject's language skills and their experimental results. Although time consuming, it is therefore recommended that any future studies also incorporate several measures of language assessment from more than one assessment.

6. The use of pictures for *The Kitten Story* has already been explored in detail (Chapter 4, Discussion page 538). The youngest children (4 -5 years old) in the replication study had demonstrated difficulties staying on task when questions moved beyond their level of linguistic or psychological comprehension. It had been suggested that the use of visual materials such as pictures might have increased the children's involvement with the story and consequently their attention span.

ER, the subject with the severest language impairment whose age equivalence was below the basal of 6 years, demonstrated behaviours similar to those of the 4 – 5 year old language normal children. These included numerous distraction strategies as well as a decrease in attention. Pictures were used in an attempt to support and focus his attention however this proved of minimal benefit. It is suggested that for this subject and for the youngest language normal children the inherent complexities of the task, coupled with the demands of a lengthy verbal interview were too great to benefit simply from the addition of visual materials.

Application of American methodology to SLI children

Generally, the American methodology devised by Donaldson and Westerman worked well with the language impaired subjects. The research protocols allowed comprehension of the story to be checked and the use of questions to prompt the remembrance of significant details. The verbal interviews also allowed for the clarification of any confusions or uncertainties. However, these subjects were carefully selected with a number of age appropriate language skills and had no additional auditory verbal or visual memory difficulties or specific problems with sequencing information. Children with more pervasive language impairments and/or these additional difficulties would be likely to experience problems completing tasks.

ER was the only language impaired child whose data did not sit comfortably within the model proposed by Donaldson and Westerman. Although all ER's responses could be matched against the American profiles, it is possible that ER could have constructed a more coherent theory of emotional

understanding with less extreme internal contradictions and inconsistencies if alternative methods had been employed. These are considered later under the heading of *Future Research* (page 565).

The role of language in thinking about emotions

Children's thinking about emotions forms part of their evolving understanding of their own and other's mental states. This forms part of current Theory of Mind (ToM) studies (see Chapter 1). Current research, including this present research, suggests that the four main theories: *theory-theory*, *modular*, *simulation* and *social-constructivist* may be complementary rather than mutually exclusive. The precise part played by language in these theories has long been problematical. Povinelli, 1996, quotes Smith, 1996, as concluding that *theory of mind cannot exist without language* and numerous studies have since looked at the role of syntax and semantics, as well as ToM deficits in clinical populations such as SLI (Chapter 1).

One of the findings of this present research was, not surprisingly, that children find it difficult to ascribe verbal meaning to the complex mental, psychological and physiological responses which constitutes emotional experience (the feeling content of an emotion). This was found for all the ages of typically developing children represented in this research, and for a variety of emotional understanding relating to single basic emotions, same valence emotions and complex contradictory emotions. It was found that older language normal boys experienced particular difficulties expressing their emotional understanding due possibly to a less secure grasp of the effective application and use of tools such as *metaphor*. Such difficulties persisted in SLI children, related to the nature of their language impairment.

The introduction to this research (Chapter 1) presented various hypotheses put forward to explain the relationship between language impairment and

emotional and behavioural difficulties. A number of recent studies have found that it is those children with persisting language impairments who are at greatest risk of emotional and behavioural difficulties and possible psychiatric disorders in later life.

Clegg et al., 2005, followed a small cohort of 20 subjects with severe delays in receptive and expressive language, and no identifiable aetiology, from childhood to their mid thirties. The study found that these children had *significantly worse social adaptation with prolonged unemployment and a paucity of close friendships and love relationships and a significantly increased risk of psychiatric disorder in adult life* than control groups, including a sibling comparison group. The study concluded by stating that the needs of the language impaired adult group were complex and required multidisciplinary support.

It is likely that a number of factors will need to be considered to take account of emotional delay in older SLI children and SLI adults. These may include delays in literacy and social isolation as well as an inability to make effective use of everyday socialisation through experience and linguistic comment and reflection of peers, parents and teachers.

This present research endorses the multifarious role of language in making sense of emotional experience. In particular it outlines three areas of children's development where the role of language appears crucial in evolving thoughts about the emotional life of the self and others:

1. In children's early role play language is the glue which enables repetition and practise to explore the individual's role in emotionally charged social scripts (verbal, cultural, physical).

As Aristotle noted, anyone can be angry, the point however is to learn to be angry *at the right thing and towards the right person, in the right way, at the right time and for the right length of time* (Nicomachean Ethics, Book 4). This "right way" is socially and culturally pre-determined and linked to the moral

development of the individual. Children can access, develop, and rehearse these “right ways” through their social play, especially role play, and through the comments of care givers and close others. As Aristotle also noted in emotional and ethical development: *It is not unimportant, then, to acquire one sort of habit or another, right from our youth; rather it is very important, indeed all-important (Nicomachean Ethics).*

In this present research *mental role play* (a development of early role play skills) was found to be significantly correlated with the younger children’s mature ability to think about and answer questions on the emotions of others. In addition children increasingly used *personal experience* (and specifically, important other’s comments and actions related to their personal experiences, such as those of parents) and their own evolving folk psychology to help formulate thoughts about emotions including the correct or “right way” of feeling and behaving.

The use of *mental role play* decreased with age. That *mental role play* represents an increasingly internalised skill of viewing emotional situations from a range of perspectives (self/others) is supported by Goldie’s view of emotional understanding in adults. In order to think about and understand the emotions of the self and others the adult role plays an emotion in his/her head from the point of view of the protagonist, another, or external to the action (*central, acentral or peripheral* imagining). Similar in kind to Aristotle’s view of the role that theatre plays in adults’ emotional lives, Goldie’s internal role play requires the enacting of emotion based on skills seen in early play development and in the abilities used by the typically developing children in this research (both *mental role play* and complex narrative *mime*) and for which language is a pre-requisite.

2. Language, especially syntax, enables the narrative context for emotion to be understood and expressed: the beginning, (initiating trigger) middle (the expression and action pertinent to the emotion) and the end (resolution) of an emotion. Numerous philosophic, linguistic and cross cultural studies have confirmed the narrative structure for a range of emotions and emotion

understanding and across a variety of different cultural groups. (See Goldie, 2000; Nussbaum, 2001; also Chapter 4, Discussion page 466).

Syntax also allows the child to construct an explanatory model for their empathic knowledge of emotion. Empathetic knowledge and theoretical understanding would develop in parallel and in line with the child's growing meta-cognitive and meta-linguistic skills. In SLI this parallel development can be disrupted as in the case of ER whose knowledge of emotion appeared in advanced of his theoretical explanation.

3. Psychoanalytic theory has long held that human beings do not like ambiguity, which causes anxiety; they prefer certainty (Freud, 1911, 1917, 1920; Bowlby, 1979; Levenson, 1983; Siegelman, 1990). Figurative language allows the experience of opposing feelings to be understood conceptually and the resulting confusions known and potentially managed more effectively. Linguistics, in the form of adversative conjunctions enables the identification and expression of that resolution in human discourse.

Metaphor was found to be the main cognitive-linguistic tool used when typically developing children talked about ambivalent emotion (age 7 – 11 years). The SLI children in this study had relatively strong semantic skills and all but one used *metaphor* when talking about emotions (AB, whose score for figurative language was below average). This is despite the findings of a number of child and adult studies which have shown that metaphor comes with more costs (e.g. in terms of longer processing times) compared with non-figurative controls. (See Noveck, Bianco and Castry, 2001). That SLI children created *metaphors* despite these costs underlies the strong cognitive drive to use figurative language when thinking and talking about emotion.

The SLI children had relatively weak syntactic skills. The three children (JD, AB and ER) who experienced difficulties with syntactic development, and especially the understanding of adversative conjunctions, found it difficult to acknowledge the contradiction of ambivalent emotion. When they did use *metaphor* related to these complex emotions it was to deny rather than

express the confused feeling content of the emotional experience. This suggests that when thinking effectively about emotional *ambivalence* both semantic and syntactic skills are necessary. Other studies have also suggested a delay in different aspects of SLI children's ToM (false-belief tasks) that is concomitant with their syntactic development (Cassidy and Ballaraman, 1997; Iarocci et al., 1997; de Villiers, 1999, 2000).

In conclusion, without the semantic and linguistic structure of communicated thought the social and cultural meaning of an emotion remains, paradoxically, entirely abstract and entirely concrete: isolated within both the unknowable mental experience of another and their observable physical responses. The ultimate implication of Theory of Mind studies, including emotional understanding, is that in order to truly know myself I must first come to know others, and language is key to both the creation and transmission of that knowledge. Children's development of this knowledge is long and complex. This present research has dealt with only one small aspect, that of ambivalent emotion, yet it has revealed the importance of a wide range of linguistic and cognitive skills, a disturbance to any one of which may have serious implications for the emotional life of the developing child.

Future research

This present research looked at both typically developing and language impaired children's understanding and expressive language in response to questions relating to ambivalent emotions. The findings of the research suggest areas of further investigation for both subject groups. It is acknowledged that the findings of both studies require replication using larger cohorts of subjects.

Language normal children:

Gender differences

The results of the second, language normal study, showed considerable gender differences in the number of expressive performance errors and the use of cognitive-linguistic devices. Further research is required to see if these gender differences persist in older (12 years+) typically developing children.

Gender and literacy

Several national studies by Education have identified underachievement in boys, with the largest gaps between boys and girls being in reading and writing (Iles, 1995; Bradford, 1996; HMI, 1993; EOC/OFSTED, 1996; National Curriculum En/QCA, 1998). Recent investigation has found that the most significant gender gap occurs in writing at the end of Key Stage 2 (Wilson, 2006). This is the age of the older subjects in this research (10 – 11 years).

Studies have paid particular attention to the problem boys experience with fiction in Key Stage 2. Understanding the emotions of characters which then motivates the action (plot) is fundamental to understanding fiction. Being able to verbalise that understanding would be essential for class discussion about stories and also, crucially, for writing about them.

This present research found that girls at age 10 – 11 years showed an increased ability to articulate their understanding of complex emotion,

incorporating an effective use of cognitive-linguistic devices such as *metaphor* in their expressive language. 10 – 11 year old boys however, showed a corresponding decrease in ability with considerably increased performance errors occurring in their expressive language. Further research would be helpful to identify if this was a contributing factor to the boys' poor literacy results, especially written language, and their adverse response to fiction at this age.

Performance vs. competence

Gender differences identified in this research were specific to emotional understanding and related to the performance and not the competence of the language normal children. Further research is required to investigate if gender differences in terms of performance vs. competence occur for other complex expressive language tasks. Does emotional understanding, and especially ambivalent emotion, represent a particular and specific area of difficulty for boys?

Delayed vs. atypical responses of language normal children

Two of the older (10 – 11 years) language normal children recruited for the second study presented with delayed and atypical responses to the interview questions and were replaced by two other suitable subjects. One girl completed all the experimental procedures successfully but unexpectedly presented with considerably delayed responses given her age. No other language normal subject presented with responses suggesting the emotional understanding of a much younger child. It was subsequently revealed that this subjects' father was in the terminal stages of cancer.

Harris, 1989, specifically looked at differences in healthy and hospitalised children's understanding of mixed emotions and their perceptions of the degree of control they had over emotions in subjects aged 6 years and 10 years. He found that the older hospitalised children consistently gave less complex responses which were similar to those of the younger children. Although the girl in this present research study was not herself hospitalised it

is possible that her delayed responses were a result of the emotional trauma of her father's illness.

The data of one of the older boys in this present research showed marked differences in the use of *metaphor* to any of the other language normal subjects. Following queries put to the class teacher by this researcher, the boy's mother later disclosed to the teacher that this boy was witnessing physical violence from the father directed at the mother which had started unexpectedly 6 months previous to the beginning of the study.

This boy used *metaphor* in response to *all* the questions put to him as part of the structured interview for *The Puppy Story*. In psychoanalytic theory, the creation of metaphor can be seen as a means of evading painful emotional truths (Siegelman, 1990). It is not possible to say if this boy was using *metaphor* for this purpose. However, both the girl's delayed responses in terms of Donaldson and Westerman's profiles and the boy's atypical responses in terms of cognitive-linguistic devices (*metaphor*) suggests that analysing language normal children's expressive language in reply to structured interviews relating to stories with emotional content might provide insight into undisclosed emotional/psychological trauma. However, considerably more research would be required to investigate the reliability of such methods.

SLI children:

Use of alternative supports

Further research is required to investigate if SLI children could access and demonstrate a more consistent and mature understanding of ambivalent emotion through application and use of methods different to that of the verbal interviews used in this research.

The purpose of Donaldson and Westerman's methodology was to elicit children's explanatory models for understanding and talking about ambivalent

emotions and emotional causality at different stages of development. Three of the SLI children in this study (JD, AB and GG) were able to demonstrate explanations similar to typical, younger language normal children. ER's explanations for ambivalent emotions were overall less coherent as they represented thinking from very disparate stages of language normal children's emotional understanding. All four children experienced difficulties acknowledging the contradictory nature of ambivalent emotion and sought to deny its inherent confusions. These denials ranged from those used by typically developing children such as changing the story to an atypical conceptualisation of such emotion (one of balance) expressed in *metaphors* not seen in the language normal children's data. GG who presented with good syntactic skills and no difficulty with adversative conjunctions was the only subject who appeared to be helped by the picture supports provided to substantially develop his emotional understanding.

Further research would help to confirm if the SLI children lacked a representative model of emotional ambivalence which acknowledged its contradictions, and possibly linked to their lack of adversative conjunctions, or if they were simply unable to demonstrate such a model within the protocols established by this particular methodology, even with the picture supports provided.

Alternative approaches could be introduced into the experimental procedures. For example, the work of Carol Grey (*Comic Strip Conversations*, 1994) explicitly uses colour to indicate feelings. More than one colour can be used to identify mixed feelings, including the confusion which occurs when those feelings are contradictory. However, it would be important to distinguish supports which allowed the SLI child to demonstrate a pre-existing understanding of ambivalence, and those which allowed the child to construct novel, more mature, ways of thinking about these complex emotional states.

Profiles of language impairment

Further research is required to look at different profiles of impaired language development and the effect on children's ability to understand and talk about

complex emotions, especially in terms of their use of cognitive-linguistic skills identified in this present study.

Although the nature of language disorder is inherently heterogeneous it would be useful to identify groups of SLI children by linguistic strengths and weaknesses and compare their performance on different aspects of the experimental task. For example, how do children with strong syntactic skills but continuing difficulties with spatial concepts cope with the type of *metaphor* required for the mature understanding of emotional ambivalence? Do children with morphological difficulties such as marking tense have problems with the narrative context of the emotion, finding it difficult to maintain the distinct time course required to identify and resolve a particular emotional situation/experience? How important are expressive versus receptive language skills in thinking and talking about emotions?

Children's performance on different tasks of emotional understanding could also be compared. For example, are adversative conjunctions necessary for conceptualising *ambivalent* emotion? Could children with poor syntactic skills but strong semantic and conceptual skills perform well on other tasks of emotional understanding which did not involve mixed or contradictory emotions?

Play

Longitudinal studies of SLI children's difficulties with different aspects of play (especially role play) could be compared with later outcomes in terms of emotional understanding, especially the use of *mental role play* and complex narrative *mime*.

If, as is argued in this research, children's early role play is important in the development of empathy then it will be necessary to measure the involvement of SLI subjects during play scripts. It may not be sufficient that SLI children engage in role play if that engagement is directed by more able/dominant play partners. The degree to which the SLI child is imaginatively involved in the play situation may be crucial for later perspective taking skills required for

complex emotional understanding and adult models for accessing and processing emotional information.

Harris has found some evidence for the important function of active role play in typically developing children's evolving ToM. Four separate studies provided persuasive evidence that cognitive and linguistic involvement in role play, whether in the context of joint play with other children, or pursued in a more solitary fashion through the creation of an imaginary character, is a correlate, and indeed an advance predictor of later success on belief tasks. (Reported in *The Work of the Imagination*, Harris, 2000).

Clinical implications and applications

Implications

The results of the research presented in this thesis, if confirmed, could have clinical implications for Speech and Language Therapy services, as well as wider repercussions for other social, educational and clinical services to children:

Early intervention services

This research has highlighted the importance of children's play, narrative and expressive language skills for their maturing emotional understanding of themselves and others. The importance of narrative in developing children's expressive language skills has now become well established and narrative therapy is increasingly used by Speech and Language Therapy services for intervention with pre-school and young school age children (Shanks, 2000; Davies et al. 2004). There is also some anecdotal evidence from those involved in the creation of narrative therapy intervention packages that these approaches have led to the development of SLI children's role play skills (Judith Carey, Stockport PCT, 2006, personal communication).

However, the significance of internalised role play skills in older (7 – 8 years) language normal children suggests that there is a specific need for detailed play observation, assessment and tutoring of SLI children in their early social play. SLI children will then need explicit support and teaching on how to incorporate this into their thinking about people. At present this is not a feature of Speech and Language Therapy intervention for this client group and would have cost and resource implications for such services.

Services for older, secondary age children

A national review of the provision for children with speech and language needs noted the increasing lack of Speech and Language Therapy services for older, school aged children (Law et al., 2000, see also 2002). A report by Botting et al. (2001) also highlighted the need for Speech and Language Therapy services for pupils in secondary school. (See also Leahy and Dodd, 2002).

This present research endorses the continued need for language therapy for older children at the top end of primary education and in secondary schooling. In particular it suggests the need for therapeutic intervention to address high level language skills such as the understanding and use of figurative language and complex, later developing conjunctions. Due to the constraints on services noted by Law et al. (above) such skills are rarely addressed or prioritised by current Speech and Language Therapy services.

In addition to the actual provision of services, clinicians would need to be aware of the developmental progression of *metaphor* from concrete to psychological representations and the role played in conceptualising and understanding emotion. It would also be important not just to develop *metaphor* and complex conjunctions in children's expressive language but to help children understand and practise their use in psychological tasks which are more abstract and demanding. This has both training and resource implications for Speech and Language Therapists.

Implications for other services

The findings of this present research could assist Government Sure Start services, designed to support children and parents in the early years, to create and target specific intervention programmes to encourage the development of all children's social play skills and their use in early social thinking.

Donaldson and Westerman's model of emotional maturation indicated progression in children's ability to take an increasing responsibility for their emotions and their resulting behaviours. It would be important for Education services and schools, especially secondary schools, to be aware that expectations for the emotional responsibility taken by SLI children would need to be adjusted to make allowance for their possible delayed maturation in this area. Child and Adolescent Mental Health Services (CAMHS) could also benefit from knowledge of the links between language impairment and difficulties with emotional development, especially those related to ambivalent emotion which is already acknowledged as having an influence on adult mental health.

Applications

Social skills programmes

The results of this present research have relevance for the planning of social skills intervention programmes for SLI children. Although numerous studies have found that, when undertaken, language therapy for older secondary aged SLI children can be very effective, there is very poor evidence for the success of social skills intervention with this, or indeed other, client groups. (See Wiig, 1992; Freedman and Wiig, 1995; Martin-Devins, 2001 for successful language therapy programmes specifically targeting older children). Three of the four SLI children in this research (JD, AB, ER) had extensive experience of social skills training and yet continued to present with delayed social and emotional understanding.

There has been little research into why social skills programmes appear to be ineffective. Looking at children with emotional behavioural difficulties (EBD) Quinn et al. (1999) commented that: *The average student with EBD would be expected to gain a modest eight percentile ranks outcome measures after participating in a social skills training programme.* Classroom based programmes were found to have only a modest, short term impact on children's social and emotional behaviours. Gresham et al. (2001), conducting a small scale review of the literature concluded that: *Social skills training, although popular, has not produced large, socially important, long term or generalised changes.*

Few intervention evaluation studies have focused specifically on the area of social skills training with language impaired children. One that did, Law and Sivyer, 2003, found relative improvements in language skills, social communication skills and self esteem, but not behaviour. While there may be a number of reasons why social skills training fails to transfer into the child's wider environment and actions one possibility might be the failure to link explicitly, language, affect and cognition.

The programme devised by Law et al. (above) addressed behaviour management, self esteem, language and social communication. Language activities related to lexical organisation skills, description of objects, classification/semantic connections, categorisation/semantic links. Social communication activities included the social use of language and circle time. There was no attempt to look at, and influence, how the children understood the links between feeling, thought and action. Yet it is this complex interaction which drives the emotional lives of language normal children.

The results of this present research have helped to show how typically developing children use language to conceptualise emotion and how this influences and changes their thinking about the actions of themselves and others. It has also shown that SLI children are at risk of a delay, and possible inability, in fully acquiring mature concepts of complex emotions and the knowledge of how these motivate behaviours. Unless this deep

understanding of emotion is addressed, social skills programmes may continue to fail to change the resulting surface behaviours of socially immature SLI children.

Individual behaviour management programmes

This present research has some limited evidence that information from an individual child's experimental results could be effectively applied to school management programmes.

Several weeks after the completion of the experimental procedures one of the SLI subjects (JD) was excluded from school due to his behaviour towards his Teaching Assistant. The researcher was eventually contacted by the child's mother. Discussion with school staff centred on explaining how this child understood, or rather failed to understand, the ambivalent emotion generated by his relationship with his Teaching Assistant and how this influenced his behaviours. This information was then used to adjust school staff's expectations of the child and to inform, with their consent, the back-to-school management plan devised in consultation with the Educational Psychologist. After several previously failed attempts this child was then successfully re-integrated into the mainstream secondary school with no further difficulties reported with his Teaching Assistant.

The above use of the information obtained from JD's responses to the experimental procedures suggests that acquiring knowledge of children's understanding of emotion through stories may be a useful means of helping school staff and others develop effective methods of supporting language impaired children who present with social and emotional difficulties.

Final Comment

This research has looked at the role of language in children's emotional development. It has specifically investigated the cognitive and linguistic skills used by typically developing and language impaired children to understand and resolve ambivalent emotion. Talking about emotion in response to a structured interview may appear too removed from the dynamic experience of actualised feelings and actions to reveal the extent of a child's emotional maturity and social functioning. However, the importance of emotional *understanding* for all aspects of a child's learning and development should not be underestimated. How a child applies, either consciously or unconsciously, their generalised knowledge of emotion may influence other aspects of their reasoned behaviour.

The neuroscientist Damasio views emotions as forms of intelligent awareness that are essential aspects of practical reasoning, allowing an individual to prioritise decision making by evaluating the importance of those decisions for that individual. In this sense, emotions help us to sort out the relationship between ourselves and the world. (See Damasio, 1994). As the philosopher Martha Nussbaum (2001) writes: *emotions serve as "internal guides" concerning the relationship between subject and circumstances*. We can learn facts and experience a variety of circumstances, but it is emotion which gives us insight into the meaning, or value, of those facts and circumstances, both for ourselves and others. Meaning, (interpretation), has to be felt in order to be known. The importance of emotion, and a child's ability to think about and conceptualise emotion, and to understand the emotional lives of the self and others, thus has wider implications than just the development of social behaviours.

Work by developmental psychologists such as Harris is beginning to show how language bridges the two worlds of cognition and affect, both within and between individuals. It is the medium by which we clarify and confirm the similarities and differences of an emotional experience between ourselves

and others. In other words it is through language, and language's effect on thought, that the child comes to understand the social, cultural, and ultimately wider psychological and cognitive meaning of emotional experience.

Diverse areas of investigation such as philosophy, psychology and linguistics are showing how, in the complexity of human societies where the correct interpretation and response to emotion is strongly linked with survival and/or success, emotional understanding is intimately entwined with the child/adult's developing imagination – the ability to project into the mental lives of others (Nussbaum's *sympathetic imagination*, Goldie's *central, acentral and peripheral imagining*). This present research has helped reveal some of the linguistic and cognitive mechanisms which may underlie this imaginative projection and developing knowledge in school aged children and the consequences when those mechanisms fail to develop properly. It addresses Wittgenstein's questions:

When the child learns to talk, when does it develop the "feeling of meaning"? Are people interested in this, when they teach it to talk and observe its progress in talking?

(Remarks on the Philosophy of Psychology, page 68e)

And it firmly places the Speech and Language Therapist amongst the cohort of those interested people.